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TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1941

No. 6

THE AUTOMATIC DEVICES CORPORATION,
PETITIONER,

vs.

SINKO TOOL & MANUFACTURING COMPANY

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT

PETITION FOR CERTIORARI FILED JULY 24, 1940.

CERTIORARI GRANTED MARCH 31, 1941.

IN THE

Supreme Court of the United States

OCTOBER TERM, A. D. 1940.

No.....

THE AUTOMATIC DEVICES CORPORATION,
Petitioner,

vs.

SINKO TOOL & MANUFACTURING COMPANY,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

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IN THE

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Plaintiff-Appellee,

7103 vs.

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Defendant-Appellant.

THE AUTOMATIC DEVICES CORPORATION,
Plaintiff-Appellant,

7104 vs.

SINKO TOOL & MANUFACTURING COMPANY,
Defendant-Appellee.

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Mr. Thomas J. Byrne,
Mr. Henry M. Huxley.

Counsel for Sinko Tool & Manufacturing Co.:
Mr. Russell Wiles,
Mr. Bernard A. Schroeder,
Mr. George A. Creighton.

Appeals from the District Court of the United States for the Northern District of Illinois, Eastern Division.

TRANSCRIPT OF RECORD FILED OCT. 12, 1939.
PRINTED RECORD.
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FILED
OCT 27 1939

IN THE

United States Circuit Court of Appeals
For the Seventh Circuit

THE AUTOMATIC DEVICES CORPORATION,
Plaintiff-Appellee,

7103

vs.

SINKO TOOL & MANUFACTURING COMPANY,
Defendant-Appellant.

THE AUTOMATIC DEVICES CORPORATION,
Plaintiff-Appellant,

7104

vs.

SINKO TOOL & MANUFACTURING COMPANY,
Defendant-Appellee.

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MR. RUSSELL WILES,
MR. BERNARD A. SCHROEDER,
MR. GEORGE A. CHRITTON.

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1 Pleas in the District Court of the United States for the Northern District of Illinois, Eastern Division, begun and held at the United States Court Room, in the City of Chicago, in said District and Division, before the Honorable William H. Holly, District Judge of the United States for the Northern District of Illinois on the 14th day of July, in the year of our Lord one thousand nine hundred and thirty-nine, being one of the days of the regular July Term of said Court, begun Monday, the 3rd day of July, and of our Independence the 163rd year. Placita.

Present:

Honorable William H. Holly.
William H. McDonnell, U. S. Marshal.
Hoyt King, Clerk.

Filed Aug. 10, 1938. 2 IN THE DISTRICT COURT OF THE UNITED STATES,

Northern District of Illinois.

Eastern Division.

The Automatic Devices Corporation
vs.
Sinko Tool and Manufacturing Company.
} No. 16188.

Be It Remembered, that the above-entitled action was commenced by the filing of the following Complaint in the above-entitled cause in the office of the Clerk of the District Court of the United States for the Northern District of Illinois, Eastern Division, on this the 10th day of August, 1938.

3 DISTRICT COURT OF THE UNITED STATES.

* * (Caption—16188) * *

BILL OF COMPLAINT.

Bill of Complaint of The Automatic Devices Corporation, plaintiff, against Sinko Tool and Manufacturing Company, Defendant.

Plaintiff, for its bill of complaint, alleges:

1. That plaintiff, The Automatic Devices Corporation, is a corporation duly organized and existing under the laws of the State of Connecticut, having its principal and a regular and established place of business at Bridgeport, Fairfield County, Connecticut, and that, upon information and belief, defendant, Sinko Tool and Manufacturing Company, is a corporation duly organized and existing under the laws of the State of Illinois, having its principal place of business at Chicago, Cook County, Illinois.

2. That this suit is brought under the patent laws of the United States for infringement by defendant upon letters patent of the United States, No. 1,736,544, granted on November 19, 1929, for Cigar Lighter, on the invention of Herbert E. Mead.

4 3. That on the 24th day of August, 1927, Herbert E. Mead, a citizen of the United States and resident of Detroit, Wayne County, Michigan, was, within the

meaning of the Statutes of the United States then in force, the first, sole, true and original inventor of certain improvements in Cigar Lighter, and, being entitled to letters patent of the United States thereon under the provisions of the said Statutes, duly filed an application in writing with the Commissioner of Patents of the United States for the grant of letters patent of the United States upon said invention and that said application was assigned Serial No. 215,236.

4. That by an instrument in writing, duly executed, delivered, accepted and recorded in the United States Patent Office, the said Herbert E. Mead sold, assigned and transferred all right, title and interest in and to the invention of said application for letters patent of the United States and in and to any letters patent of the United States to be granted thereon to S. T. Jessop Co., Inc., a corporation duly organized and existing under the laws of the State of Illinois.

5. That all of the requirements of the then existing Statutes of the United States and Rules of Practice of the United States Patent Office having been duly complied with, letters patent of the United States on said application, Serial No. 215,236, were duly granted to S. T. Jessop Co., Inc., as assignee of said Herbert E. Mead, on the 19th day of November, 1929, and that said letters patent were assigned No. 1,736,544.

6. That, subsequent to the grant of said letters patent No. 1,736,544, said letters patent were, by mesne assignments, sold, assigned and transferred unto plaintiff, The Automatic Devices Corporation, together with claims for all past infringement of said letters patent and the right to sue and recover for the same, and that, since said assignment to plaintiff, it has been and now is vested with all right, title and interest in and to said letters patent No. 1,736,544. Profert of the said assignments or duly authenticated copies thereof is hereby made.

7. That on May 1, 1936, a non-exclusive license in writing was granted to Casco Products Corporation, a corporation duly organized and existing under the laws of the State of Connecticut, and having its principal and a regular and established place of business at Bridgeport, Fairfield County, Connecticut, to manufacture, use and sell devices made according to and embodying the inventions of said patent in suit No. 1,736,544; that the inventions of said letters patent in suit No. 1,736,544 are of

great value, importance, benefit and advantage to plaintiff, its licensee and to the public; that, since May 1, 1936, said license has been and now is in full force and effect; that plaintiff, its predecessor and licensee have expended large sums of money in making the inventions described and claimed in said letters patent in suit No. 1,736,544 profitable to them and useful to the public; that plaintiff's said licensee has manufactured and sold devices made according to and embodying the inventions of said letters patent No. 1,736,544, and that such devices have been introduced into extensive commercial use; that plaintiff's said licensee has created a great and increasing demand for devices made according to and embodying the inventions of said letters patent; that plaintiff's said licensee is prepared, equipped and ready to supply the demand that has been created for devices made according to and embodying the inventions of said letters
6 patent, and that the public has been given the benefit and advantage of the inventions of said letters patent.

8. That, on information and belief, defendant, Sinko Tool and Manufacturing Company, well knowing the premises and the rights secured to plaintiff, as aforesaid, without license or permission and in violation and willful infringement of the rights of plaintiff under said letters patent No. 1,736,544, and contriving to injure plaintiff and to deprive it of the benefits and advantages which might and otherwise would have accrued unto it from said inventions after the grant of said letters patent and assignment thereof to plaintiff, before the commencement of this suit and within six years prior thereto, did unlawfully manufacture, use and sell and is now making, using and selling and is threatening to continue to manufacture, use and sell devices made according to and embodying the inventions embraced in and covered by said letters patent.

9. That, on information and belief, the said defendant has derived and received and will derive and receive from the aforesaid infringement upon said letters patent gains, profits and advantages but to what amount the plaintiff is not informed and cannot set forth; that the plaintiff, by reason of the aforesaid infringement, has been and will be deprived of and prevented from receiving, if such infringement is not restrained by this Court, all the gains, and profits to which it is lawfully entitled and which it would have derived and received and would now be deriving and receiving but for the aforesaid infringement;

that by reason of the aforesaid infringement, plaintiff and its licensee have been injured and have sustained loss and damage thereby, and that, unless the said infringement is immediately restrained by an order and writ
7 of injunction issuing out of this Court, further and irreparable injury, loss and damage will be caused to the plaintiff and its licensee.

10. That the defendant has been duly notified of its infringement upon said original letters patent No. 1,736,544, but, nevertheless, as plaintiff is informed and believes and therefore alleges, defendant continued and now continues to infringe upon said letters patent since said notice, whereby defendant has continued to profit and the plaintiff has been damaged.

Plaintiff therefore prays:

1. That the defendant be directed to appear and answer unto this bill of complaint but not under oath, an answer under oath being hereby expressly waived.

2. For a decree holding that said letters patent of the United States No. 1,736,544 are good and valid in law, that plaintiff is vested with all right, title and interest in and to the same, that defendant has infringed upon said letters patent and that defendant has willfully infringed upon said letters patent.

3. For a permanent injunction, and a preliminary injunction during the pendency of this suit, restraining and enjoining the defendant, its agents, attorneys, servants and employees and all others acting by and under its direction or authority, its successors or assigns, from making or causing to be made, using or causing to be used, selling or causing to be sold devices or parts therefor made in accordance with and embodying the inventions embraced in and covered by said letters patent No. 1,736,544, or from infringing upon and violating the inventions of said letters patent in any way whatsoever.
8 4. That an accounting be awarded to plaintiff of defendant's profits, gains and advantages and the damages suffered by plaintiff because of defendant's infringement upon the said letters patent of the United States, and that the amount of damages for said infringement of said letters patent may, in view of the willful character of said infringement, be increased to a sum not exceeding three (3) times the amount thereof as provided by law.

5. For costs of this suit.

6. For such other and further relief as the circumstances of the case may require.

The Automatic Devices Corporation,
By Arthur A. Johnson,
President.

Wilkinson, Huxley, Byron & Knight,
(38 South Dearborn St., Chicago),
Solicitors for Plaintiff,
Chicago, Illinois.

Thomas J. Byrne,
(233 Broadway, New York),
Henry M. Huxley,
(38 South Dearborn St., Chicago),
Of Counsel.

State of Connecticut, } ss.
County of Fairfield. }

Arthur A. Johnson, being duly sworn, deposes and says that he is the President of The Automatic Devices Corporation, plaintiff named in the foregoing bill of complaint; that he has read the foregoing bill of complaint and that the facts therein stated are true except as to such facts as are stated on information and belief
9 and as to such facts he believes it to be true; and that the reason why this verification is not made by the above named plaintiff personally is that plaintiff is a corporation of which affiant is a duly qualified officer.

Arthur A. Johnson.

Subscribed and sworn to before me this 10th day of August, 1938.

M. R. Bond,
(Notarial Seal) *Notary Public.*

Endorsed: Filed August 10, 1938. Philip L. Sullivan, Judge.

10 And on, to wit, the 28th day of January, 1939, came the Defendant by its attorneys and filed in the Clerk's office of said Court its certain Answer in words and figures following, to wit:

11 IN THE UNITED STATES DISTRICT COURT. Filed Jan. 28, 1939.
* * (Caption—16188) * *

ANSWER OF SINKO TOOL & MFG. CO.

Defendant, Sinko Tool & Mfg. Co., for answer to the bill of complaint says as follows:

1. Defendant admits that it is a corporation duly organized and existing under the laws of the State of Illinois, has its principal and regular established place of business at Chicago, Illinois, but is not advised as to the other allegations of Paragraph 1 and therefore denies the same.

2. Defendant admits that the suit is brought under the patent laws of the United States but denies that it has infringed.

3. Defendant admits that Herbert E. Mead on the 24th day of August, 1927 filed an application for Letters Patent in the United States Patent Office but denies the other allegations of Paragraph 3.

4. Defendant is not advised as to the allegations of Paragraph 4 and therefore denies the same.

12 5. Defendant admits that Letters Patent No. 1,736,544 issued on the 19th day of November, 1929 to S. T. Jessop Co., Inc. but denies the other allegations of Paragraph 5.

6. Defendant is not advised as to the allegations of Paragraph 6 and demands strict proof thereof.

7. Defendant is not advised, except by the bill of complaint, as to an alleged non-exclusive license to Casco Products Corporation, and therefore denies the same; defendant denies that the alleged inventions of said Letters Patent No. 1,736,544 are of great value, importance, benefit, and advantage to plaintiff, its licensee and to the public; defendant is not advised as to any expenditures that plaintiff, its predecessor or licensee have expended in attempting to make the alleged inventions, described in said Letters Patent, profitable to them and useful to the public and therefore denies the allegation; defendant denies that devices made according to the alleged inventions of said Letters Patent No. 1,736,544 have been introduced into extensive commercial use; defendant denies that there is a great and increasing demand for devices made according to and embodying the alleged

inventions of said Letters Patent; defendant is not advised as to the other allegations of Paragraph 7 and therefore denies the same.

8. Defendant denies the allegations of Paragraph 8.

13 9. Defendant denies the allegations of Paragraph 9.

10. Defendant admits that it has been notified of its alleged infringement of said Letters Patent No. 1,736,544 but denies that it has infringed or is now infringing said Letters Patent and denies the other allegations of Paragraph 10.

11. Defendant denies that plaintiff is entitled to any of the relief prayed for.

12. Further answering defendant avers that said Letters Patent No. 1,736,544 is invalid and void because the alleged inventions, improvements, and discoveries purported to be patented therein and every substantial and material part thereof, were published, described, and patented prior to the alleged inventions or discoveries thereof by said Mead, or more than two years prior to the filing of the application for patent thereon, in and by the following specified patents, to-wit:

Number	Name	Date
493,380	E. F. Hammarstrom, Stockholm, Sweden	Mar. 14, 1893
852,326	F. L. Harley, Quakertown, Pennsylvania	Apr. 30, 1907
876,253	W. J. Barr, Cleveland, Ohio	Jan. 7, 1908
1,046,777	W. S. Hadaway, Jr., East Orange, N. J.	Dec. 10, 1912
1,141,576	E. J. Ovington, Brookline, Massachusetts	June 1, 1915
1,261,256	R. H. Maple, Indianapolis, Indiana	Apr. 2, 1918
1,294,045	J. Cavanagh, Meriden, Connecticut	Feb. 11, 1919
1,376,154	J. M. Morris, Rochester, New York	Apr. 26, 1921
1,377,257	J. F. Lamb, New Britain, Connecticut	May 20, 1921
1,387,980	R. R. Haugh, Chicago, Illinois	Aug. 16, 1921
1,397,777	C. R. Pelton, et al., Detroit, Michigan	Nov. 22, 1921
1,400,646	E. E. Webster, Chicago, Illinois	Dec. 20, 1921
1,416,263	W. Campbell, Detroit, Michigan	May 16, 1922
1,431,220	H. P. Donle, Meriden, Connecticut	Oct. 10, 1922
1,437,701	A. Zecchini, Turin, Italy	Dec. 5, 1922
1,530,730	H. L. Leeb, South Orange, New Jersey	Mar. 24, 1925

1,556,246 C. F. Norden, New York City, New York ..... Oct. 6, 1925
14 1,565,499 T. A. Reid, Wilkinsburg, Pennsylvania ..... Dec. 15, 1925
1,630,358 M. J. Sandin, Wilkinsburg, Pennsylvania ..... May 31, 1927
Re. 17,840 M. J. Sandin, Wilkinsburg, Pennsylvania ..... Oct. 21, 1930
1,689,007 C. C. Arnesen, Chicago, Illinois ... Oct. 23, 1928
1,838,363 F. C. Copeland, San Francisco, California ..... Dec. 29, 1931
1,844,206 F. C. Copeland, San Francisco, California ..... Feb. 9, 1932

13. Defendant avers that said Herbert E. Mead was not the original, first, and true inventor of the alleged invention purported to be covered by said Letters Patent No. 1,736,544 or of any material or substantial part thereof but that the same was disclosed prior to the alleged invention by said Mead, in printed publications, and, among others, in the specifications and drawings of said Letters Patent listed in Paragraph 12 hereof, as well as in other printed publications of which defendant prays leave to refer hereafter by amendment or otherwise when it shall have ascertained the same.

14. Defendant avers, on information and belief, that in view of the knowledge and practice of the art at and prior to the date of filing of the application for Letters Patent of the United States in suit, No. 1,736,544, it required no invention but only the ordinary skill of the art to which said alleged invention pertains and that said Letters Patent are consequently invalid.

15. Further answering defendant avers that said Letters Patent No. 1,736,544 does not describe the alleged invention thereof as required by law in such full, clear and exact terms as to enable any person skilled in the
15 art or science to which they pertain, or with which they are most nearly connected, to make, employ or use the same, and does not point out and distinctly claim the parts or improvements claimed as patentee's alleged invention as required by law and are, therefore, invalid.

16. Defendant avers that the alleged invention set forth in said Letters Patent No. 1,736,544 is inoperative and devoid of novelty or utility and accordingly the patent is invalid and void.

17. Defendant avers that by reason of the proceedings had or taken in the United States Patent Office in

prosecution of the application for said Letters Patent No. 1,736,544, that the patentee thereof, his legal representatives or assigns, is estopped from maintaining the same in such scope as to cover or embrace any apparatus which defendant may have made, used or sold, or which it is now making, using or selling.

18. Defendant avers that said Letters Patent No. 1,736,544 is invalid and void for the reason that the alleged invention thereof, and of all material and substantial parts thereof, were invented by, known to or in public use or on sale in the United States prior to the alleged invention by said Mead, or more than two years prior to the filing of the application for Letters Patent of the United States in suit, No. 1,736,544, the persons named in Paragraph 12 above, and by Westinghouse
16 Electric & Manufacturing Company, a corporation of Pennsylvania, located at East Pittsburgh, Pennsylvania.

19. Defendant avers that it has been diligent in ascertaining and setting forth herein instances of prior knowledge, invention, public use, publication, and patenting of the alleged inventions of said Letters Patent No. 1,736,544, yet, believing many further instances to exist, prays leave to add the same by amendment or otherwise when ascertained.

Defendant therefore denies that plaintiff is entitled to the relief prayed for or to any part thereof, or to any relief against this defendant, and it prays that the bill be dismissed with costs to it.

Sinko Tool & Mfg. Co.,
By Chritton, Wiles, Davies, Hirschl & Dawson,
Solicitors.

B. A. Schroeder,
Of Counsel.
Sept. 23, 1938.

17 And on, to wit, the 30th day of December, 1938 came the Plaintiff by Its attorneys and filed in the Clerk's office of said Court Its certain Motion for Leave to File Supplemental Complaint in words and figures following, to wit:

18 IN THE DISTRICT COURT OF THE UNITED STATES. Filed Dec. 30, 1938.
* * (Caption—16188) * *

MOTION FOR LEAVE TO FILE SUPPLEMENTAL COMPLAINT.

The plaintiff Moves the Court for leave to file its Supplemental Complaint attached hereto, in which plaintiff charges the defendant with infringement of additional United States Letters Patent named therein, which have been issued by the United States Patent Office since the filing of the original Bill of Complaint.

Henry M. Huxley,
Counsel for Plaintiff.

Chicago, Illinois,
December 28, 1938.

Defendant hereby consents to the filing of the Supplemental Complaint as set forth in the foregoing Motion.

B. A. Schroeder,
Counsel for Defendant.

Leave to file Supplemental Complaint is hereby granted this 30 day of December, 1938.

(Barnes)
U. S. District Judge.

19 And on, to wit, the 30th day of December, 1938 came the Plaintiff by Its attorneys and filed in the Clerk's office of said Court Its certain Supplemental Complaint in words and figures following, to wit:

20 DISTRICT COURT OF THE UNITED STATES.
* * (Caption—16188) * *

SUPPLEMENTAL COMPLAINT.

Plaintiff, for its supplemental bill of complaint, alleges:

That on or about the 10th day of August, 1938, plaintiff, The Automatic Devices Corporation, a corporation organized and existing under the laws of the State of Connecticut and having its principal and a regular and established place of business at Bridgeport, Fairfield

County, Connecticut, filed its original bill of complaint in this Court in this civil action against the above named defendant; that in said original bill of complaint it is alleged that defendant has infringed upon letters patent of the United States No. 1,736,544, granted on November 19, 1929, for Cigar Lighter, on the invention of Herbert E. Mead; that plaintiff is vested with title in and to the said letters patent No. 1,736,544; that on or about the 23rd day of September, 1938, defendant filed its answer to the original bill of complaint in this civil action;
21 that, since the filing of defendant's answer in this civil action, no further proceedings have been had or taken; that, subsequent to the filing of the original bill of complaint in this civil action, and on September 6, 1938, letters patent of the United States No. 2,129,374, for Electric Cigar Lighter, were granted to plaintiff as assignee of the inventor, Arthur A. Johnson, and that, since the grant of said letters patent No. 2,129,374 on the 6th day of September, 1938, defendant has infringed upon said letters patent No. 2,129,374; that, subsequent to the filing of the original bill of complaint in this civil action, and on December 13, 1938, letters patent of the United States No. 2,140,311, for Cigar Lighter, were granted to plaintiff as assignee of the inventor, Joseph H. Cohen, and that, since the grant of said letters patent No. 2,140,-311 on the 13th day of December, 1938, defendant has infringed upon said letters patent No. 2,140,311.

1. Plaintiff adopts and makes part of this supplemental complaint the allegations contained in paragraph numbered 1 of the original bill of complaint, the same as if each of the allegations contained therein were specifically repeated herein.

2. That this suit is brought under the patent laws of the United States for infringement by defendant upon letters patent of the United States No. 1,736,544, granted on November 19, 1929, for Cigar Lighter, on the invention of Herbert E. Mead; No. 2,129,374, granted on
22 September 6, 1938, for Electric Cigar Lighter, on the invention of Arthur A. Johnson; and No. 2,140,311, granted on December 13, 1938, for Cigar Lighter, on the invention of Joseph H. Cohen.

3. Plaintiff adopts and makes part of this supplemental complaint the allegations contained in paragraphs numbered 3, 4, 5 and 6 of the original bill of complaint, the same as if each of the allegations contained therein were specifically repeated herein.

4. That on or about the 1st day of May, 1936, a non-exclusive license in writing was duly granted to and accepted by Casco Products Corporation, a corporation duly organized and existing under the laws of the State of Connecticut and having its principal place of business at Bridgeport, Fairfield County, Connecticut, to manufacture, use and sell devices embodying the invention of said letters patent No. 1,736,544, that under the terms and conditions of the said license agreement said licensee received and accepted a license under each of said letters patent No. 2,129,374 and No. 2,140,311, to manufacture, use and sell devices embodying the inventions thereof, and that since said 1st day of May, 1936, said license has been and now is in full force and effect; that the inventions of said letters patent Nos. 1,736,544, 2,129,374 and 2,140,311 are of great value, importance, benefit and advantage to plaintiff, its said licensee and to the public; that plaintiff, its predecessor and said licensee have expended large sums of money in making the inven-
23 tion described and claimed in said letters patent No. 1,736,544 profitable to them and useful to the public; that plaintiff's said licensee has manufactured and sold devices embodying the invention of said letters patent No. 1,736,544 which have been introduced into extensive commercial use; that plaintiff's said licensee has created a great and increasing demand for devices embodying the invention of said letters patent No. 1,736,544; that plaintiff's said licensee is prepared, equipped and ready to supply the demand that has been created for such devices, and that the public has been given the benefit and advantage of the invention of said letters patent No. 1,736,544.

5. That defendant, Sinko Tool and Manufacturing Company, well knowing the rights secured to plaintiff as aforesaid, without license or permission and in violation and willful infringement of the rights of plaintiff in and to said letters patent No. 1,736,544, after the grant of said letters patent, before the commencement of this suit, and within six (6) years prior thereto, and in and to said letters patent No. 2,129,374, after the grant of said letters patent, before the filing of this supplemental complaint in this action, and within six (6) years prior thereto, and in and to said letters patent No. 2,140,311, after the grant of said letters patent, before the filing of this supplemental complaint in this action, and within

six (6) years prior thereto, did unlawfully manufacture, use and sell devices embodying the inventions of said letters patent Nos. 1,736,544, 2,129,374 and 2,140,311 and, upon information and belief, will continue to do so unless enjoined in this Court; that plaintiff and its licensee have sustained loss and damage thereby, and
24 that, unless said infringement is restrained by this Court, further and irreparable damage will be caused to plaintiff and its said licensee.

6. Plaintiff adopts and makes part of this supplemental complaint the allegations contained in paragraph numbered 9 of the original bill of complaint, the same as if each of the allegations contained therein were specifically repeated herein.

7. That the said licensee of plaintiff has placed the Statutory notice on all cigar lighters manufactured and sold by it embodying the invention of said letters patent No. 1,736,544, and that the defendant has been duly notified of its infringement upon said letters patent Nos. 1,736,544, 2,129,374 and 2,140,311, but, nevertheless, as plaintiff is informed and believes and therefore alleges, defendant continued and now continues to infringe upon each of said letters patent since said notice, whereby defendant has continued to profit and the plaintiff has been damaged.

Wherefore, plaintiff prays for a decree holding that said letters patent Nos. 1,736,544, 2,129,374 and 2,140,311 are good and valid in law, that plaintiff is vested with title to the same, that defendant has infringed upon said letters patent Nos. 1,736,544, 2,129,374 and 2,140,311, that a permanent injunction, and a preliminary injunction during the pendency of this suit, be granted, restraining and enjoining defendant, its agents, attorneys, servants and employees, and all others acting by and under its direction or authority, its successors or assigns, from
25 making or causing to be made, using or causing to be used, selling or causing to be sold devices or parts thereof made according to and embodying the inventions disclosed and claimed in said letters patent Nos. 1,736,544, 2,129,374 and 2,140,311, that an accounting of defendant's profits and plaintiff's damages because of defendant's infringement upon said letters patent Nos. 1,736,544, 2,129,374 and 2,140,311 be awarded to plaintiff, and that, because of the willful nature of defendant's infringement upon said letters patent, plaintiff's damages shall be in-

creased in a sum not exceeding three (3) times the amount thereof, and that plaintiff be awarded costs.

The Automatic Devices Corporation,
By Arthur A. Johnson,
President.

Wilkinson, Huxley, Byron & Knight,
Attorneys for Plaintiff,
First National Bank Building,
Chicago, Illinois.
Thomas J. Byrne,
Henry M. Huxley,
Of Counsel

State of Connecticut, } ss:
County of Fairfield. }

Arthur A. Johnson, being duly sworn, deposes and says that he is the President of The Automatic De-
26 vices Corporation, plaintiff named in the foregoing supplemental complaint; that he has read the supplemental complaint and that the facts therein stated are true except as to such facts are are stated on information and belief and as to such facts he believes it to be true; and that the reason why this verification is not made by the above named plaintiff personally is that plaintiff is a corporation of which affiant is a duly qualified officer.

Arthur A. Johnson.

Subscribed and sworn to before me this 15th day of December, 1938.

(Seal)

Anne Pistey,
Notary Public.

32 And on, to wit, the 23rd day of September, 1938 came the Defendant by Its attorneys and filed in the Clerk's office of said Court Its certain Answer of Sinko Tool & Mfg. Co., To Supplemental Complaint in words and figures following, to wit:

Filed Sept. 23, 1938. 33

IN THE UNITED STATES DISTRICT COURT.

• • (Caption—16188) • •

ANSWER OF SINKO TOOL & MFG. CO. TO SUPPLEMENTAL BILL OF COMPLAINT.

Defendant, Sinko Tool & Mfg. Co., for answer to the Supplemental Complaint, filed December 30, 1938, says as follows:

1. Defendant repeats its answer to paragraph numbered 1 of the original bill of complaint.

2. Defendant admits that the suit is brought under the patent laws of the United States but denies that it has infringed.

3. Defendant repeats its answers to paragraphs numbered 3, 4, 5, and 6 of the original bill of complaint.

4. Defendant is not advised, except by the bill of complaint, as to the alleged non-exclusive license to Casco Products Corporation, and therefore denies the same; defendant denies that the alleged inventions of said Letters Patent Nos. 1,736,544, 2,129,374, and 2,140,311 are of great value, importance, benefit and advantage to plaintiff, its alleged licensee and the public; defendant is
34 not advised as to any expenditures that plaintiff, its predecessor and said alleged licensee, have made in attempting to make said alleged inventions, described in said Letters Patent, profitable to them and useful to the public, and therefore denies the allegation; defendant denies that devices made according to the alleged inventions of said Letters Patent No. 1,736,544 have been introduced into extensive commercial use; defendant denies that there is a great and increasing demand for devices made according to and embodying the alleged inventions of said Letters Patent; defendant is not advised as to the other allegations of paragraph 4, and therefore denies the same.

5. Defendant denies the allegations of paragraph 5.

6. Defendant repeats its answer to paragraph 9 of the original bill of complaint.

7. Defendant admits that it has been notified of its alleged infringement of Letters Patent No. 1,736,544, but denies that it has been duly notified of its alleged infringement of Letters Patent Nos. 2,129,374 or 2,140,311; denies that it had received any notice whatever of the al-

leged infringement of Letters Patent Nos. 2,129,374 or 2,140,311 at the time the Supplemental Complaint and affidavit were executed, i. e., December 15, 1938; and denies the other allegations of paragraph 7.

8. Defendant denies that plaintiff is entitled to any of the relief prayed for.

35 9. Defendant repeats and makes part of this answer to the Supplemental Complaint, the allegations contained in paragraphs numbered 12, 13, and 18, and adds to the list of patents in paragraph 12, the following specified patents, to-wit:

Number	Name	Date
926,584	D. K. Morris, et al., Coventry, England	June 29, 1909
1,405,450	M. H. Shoenberg, San Francisco, Calif.	Feb. 7, 1922
1,433,277	K. G. Hogel, Stockholm, Sweden	Oct. 24, 1922
1,614,169	E. Aichele, Irvington, New Jersey	Jan. 11, 1927
1,780,462	S. M. Carmean, et al., Kansas City, Mo.	Nov. 4, 1930
Br. 285,200	S. Smith and Sons, London, England	Feb. 16, 1928

10. Defendant repeats and makes part of this answer to the Supplemental Complaint, the allegations contained in paragraphs 14, 15, 16, and 17 of its answer to the original bill of complaint, the same as if each of the allegations contained therein were specifically repeated herein.

11. Further answering defendant avers that said Johnson Letters Patent No. 2,129,374 is invalid and void because the alleged inventions, improvements, and discoveries, purported to be patented therein and every substantial and material part thereof, were published, described, and patented prior to the alleged inventions or discoveries thereof by said Johnson, or more than two years prior to the filing of the application for patent thereon, in and by the following specified patents, to-wit:

Number	Name	Date
891,400	P. A. Brown, Denver, Colorado.	June 23, 1908
926,584	D. K. Morris, et al., Coventry, England	June 29, 1909
1,328,478	M. H. Baker, Braintree, Massachusetts	Jan. 20, 1920
1,400,646	E. C. Webster, Chicago, Illinois.	Dec. 20, 1921

1,433,277	K. G. Hogel, Stockholm, Sweden	Oct. 24, 1922
1,437,701	A. Zecchini, Turin, Italy	Dec. 5, 1922
1,563,854	R. R. Haugh, Chicago, Illinois	Dec. 1, 1925
36 1,565,499	T. A. Reid, Wilkinsburg, Pennsylvania	Dec. 15, 1925
1,614,169	E. Aichele, Irvington, New Jersey	Jan. 11, 1927
1,630,358	M. J. Sandin, Wilkinsburg, Pennsylvania	May 31, 1927
1,689,007	C. Arnesen, Chicago, Illinois	Oct. 23, 1928
1,736,544	H. E. Mead, Detroit, Michigan	Nov. 19, 1929
1,780,462	S. M. Carmean, et al., Kansas City, Mo.	Nov. 4, 1930
1,844,206	F. C. Copeland, San Francisco, Calif.	Feb. 9, 1932
1,939,194	E. D. Angell, Wollaston, Massachusetts	Dec. 12, 1933
2,002,492	B. Dess, Chicago, Illinois	May 28, 1935
2,117,232	J. H. Cohen, Bridgeport, Connecticut	May 10, 1938
Br. 285,200	S. Smith and Sons, London, England	Feb. 16, 1928
Br. 298,073	Adolf Rupps, Tubingen, Germany	May 9, 1929

12. Defendant avers that Arthur A. Johnson was not the original, first, and true inventor of the alleged invention purported to be covered by said Letters Patent No. 2,129,374 or of any material or substantial part thereof but that the same was disclosed prior to the alleged invention by said Johnson, in printed publications, and, among others, in the specifications and drawings of said Letters Patent listed in paragraph 11 hereof, as well as in other printed publications of which defendant prays leave to refer hereafter by amendment, or otherwise, when it shall have ascertained the same.

13. Defendant avers that said Johnson Letters Patent No. 2,129,374 is invalid and void for the reason that the alleged invention thereof, and of all material and substantial parts thereof, were invented, known to, or in public use, or on sale in the United States, prior to the alleged invention by said Johnson, or more than two years prior to the filing of the application for Letters Patent of the United States in suit, No. 2,129,374, by the persons named in paragraph 11 above, and by officers

and employees of Sinko Tool & Mfg. Co., defendant herein.

37 14. Further answering defendant avers that said Cohen Letters Patent No. 2,140,311 is invalid and void because the alleged inventions, improvements, and discoveries purported to be patented therein and every substantial and material part thereof, were published, described, and patented prior to the alleged inventions or discoveries thereof by said Cohen, or more than two years prior to the filing of the application for patent thereon, in and by the following specified patents, to-wit:

Number	Name	Date
926,584	D. K. Morris, et al., Coventry, England	June 29, 1909
1,431,220	H. P. Donle, Meriden, Connecticut	Oct. 10, 1922
1,437,701	A. Zecchini, Turin, Italy	Dec. 5, 1922
1,530,730	H. L. Leeb, South Orange, New Jersey	Mar. 24, 1925
1,565,499	T. A. Reid, Wilkinsburg, Pennsylvania	Dec. 15, 1925
1,614,169	E. Aichele, Irvington, New Jersey	Jan. 11, 1927
1,630,358	M. J. Sandin, Wilkinsburg, Pennsylvania	May 31, 1927
1,689,007	C. Arnesen, Chicago, Illinois	Oct. 23, 1928
1,710,531	J. H. Cohen, Bridgeport, Connecticut	Apr. 23, 1929
1,736,544	H. E. Mead, Detroit, Michigan	Nov. 19, 1929
1,780,462	S. M. Carmean, et al., Kansas City, Mo.	Nov. 4, 1930
1,844,206	F. C. Copeland, San Francisco, Calif.	Feb. 9, 1932
1,944,925	J. H. Cohen, Bridgeport, Connecticut	Jan. 30, 1934
Br. 285,200	S. Smith and Sons, London, England	Feb. 16, 1928
Br. 298,073	Adolf Rupps, Tubingen, Germany	May 9, 1929

15. Defendant avers that said Joseph H. Cohen was not the original, first, and true inventor of the alleged invention purported to be covered by said Letters Patent No. 2,140,311, or of any material or substantial part thereof, but that the same was disclosed prior to the

alleged invention by said Cohen, in printed publications, and, among others, in the specifications and drawings of said Letters Patent listed in paragraph 14 hereof, as well as in other printed publications of which defendant prays leave to refer hereafter by amendment, or otherwise, when it shall have ascertained the same.

38 16. Defendant avers that said Cohen Letters Patent No. 2,140,311 is invalid and void for the reason that the alleged invention thereof, and of all material and substantial parts thereof, were invented by, known to, or in public use, or on sale in the United States prior to the alleged invention by said Cohen, or more than two years prior to the filing of the application for Letters Patent No. 2,140,311, the persons, other than Cohen, named in paragraph 14 above, and by officers and employees of defendant, Sinko Tool & Mfg. Co.

17. Further answering defendant avers that Cohen Letters Patent No. 2,140,311 is not a division of Cohen Patent No. 2,117,703, dated May 17, 1938, of which it purports to be a division, because it was issued for an alleged invention different from that originally described and claimed in the earlier patent.

18. Further answering defendant avers that Cohen Patent No. 2,140,311 is wholly invalid and void because the description and claims relied upon in the present suit constitute new matter, inserted as an amedment, and not being disclosed, described, or claimed in the application originally filed.

19. Further answering defendant avers that the devices alleged to infringe Letters Patent No. 2,140,311 were being manufactured, sold, and used publicly by defendant Sinko Tool & Mfg. Co., before said Letters Patent

39 was granted and before claims purporting to cover said devices were inserted in the patent application which resulted in Cohen Patent No. 2,140,311; that Joseph H. Cohen and plaintiff knew of such manufacture, sale, and public use of the devices by defendant; that Sinko Tool & Mfg. Co. thereby acquired intervening rights; and that the claims relied upon are of insufficient scope to cover said devices.

20. Further answering defendant avers that said Letters Patent Nos. 2,129,374 and 2,140,311 do not describe the alleged invention thereof as required by law in such full, clear and exact terms as to enable any person skilled in the art or science to which they pertain, or with which

they are most nearly connected, to make, employ, or use the same, and do not point out and distinctly claim the parts or improvements claimed as patentee's alleged invention as required by law and are, therefore, invalid.

21. Defendant avers that in view of the knowledge and practice of the art at and prior to the date of filing of the applications for said Letters Patent Nos. 2,129,374 and 2,140,311, it required no invention but only the ordinary skill of the art to which said alleged invention pertains, and that said Letters Patent Nos. 2,129,374 and 2,140,311 are consequently invalid.

22. Defendant avers that the alleged inventions set forth in Letters Patent Nos. 2,129,374 and 2,140,311 are inoperative, devoid of novelty or utility, and accordingly the patents are invalid and void.

40 23. Defendant avers that by reason of the proceedings had or taken in the United States Patent Office in the prosecution of application for Letters Patent Nos. 2,129,374 and 2,140,311, that the patentees thereof, or their legal representatives or assigns, are estopped from maintaining the same in such scope as to cover or embrace any apparatus which defendant may have made, used, or sold, or which it is now making, using, or selling.

24. Defendant avers that it has been diligent in ascertaining and setting forth herein instances of prior knowledge, invention, public use, publication, and patenting of the alleged invention of said Letters Patent Nos. 1,736,544, 2,129,374, and 2,140,311, yet, believing many further instances to exist, prays leave to add the same by amendment or otherwise when ascertained.

Defendant, therefore, denies that plaintiff is entitled to the relief prayed for, or to any part thereof, or to any relief against this defendant, and it prays that the bill be dismissed with costs to it.

Sinko Tool & Mfg. Co.
By Chritton, Wiles, Davies,
Hirschl & Dawson,
Solicitors.

B. A. Schroeder,
Of Counsel.

Filed Jan. 28, 1939.

27 And on, to wit, the 6th day of January, 1939 came the defendant by its attorneys and filed in the Clerk's office of said Court its certain Motion for a Bill of Particulars in words and figures following, to wit:

Filed Jan. 6, 1939.

28 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption 16188) * *

MOTION FOR A BILL OF PARTICULARS.

Now comes defendant, by its solicitors, and moves that plaintiff be ordered to file, within ten (10) days after an order hereon, further and better particulars in reference to its alleged cause of action set forth in its Supplemental Complaint filed herein on the 30th day of December, 1938, in the following respects, to-wit:

Referring to paragraph numbered 5 of the Supplemental Complaint, specify which of defendant's cigar lighters are charged to infringe Letters Patent Nos. 1,736,544, 2,129,374, and 2,140,311, and as to each of such lighters, specify the claims of said Letters Patent on which the charge of infringement is based.

Defendant further moves that its time for answering the Supplemental Complaint be extended for a period of twenty (20) days from and after the date when plaintiff shall file its Bill of Particulars; or, in case of denial of this motion, twenty (20) days from the date of such denial

Jan. 6, 1939.

Sinko Tool & Mfg. Co.
By Chritton, Wiles, Davies,
Hirschl & Dawson,
Solicitors.

B. A. Schroeder,
Of Counsel.

No objection by plaintiff.
(Signed) Henry Huxley,
Of Counsel.

29 And on, to wit, the 9th day of January, 1939 came the plaintiff by its attorneys and filed in the Clerk's office of said Court its certain Bill of Particulars in words and figures following, to wit:

30 IN THE DISTRICT COURT OF THE UNITED STATES. Filed Jan. 9, 1939.
* * (Caption 16188) * *

PLAINTIFF'S BILL OF PARTICULARS.

In response to defendant's motion for bill of particulars, plaintiff states that its charge of infringement is based particularly on defendant's automatic cigar lighters of the Oldsmobile and Hudson types, as illustrated by the attached photostat marked "Plaintiff's Exhibit 1".

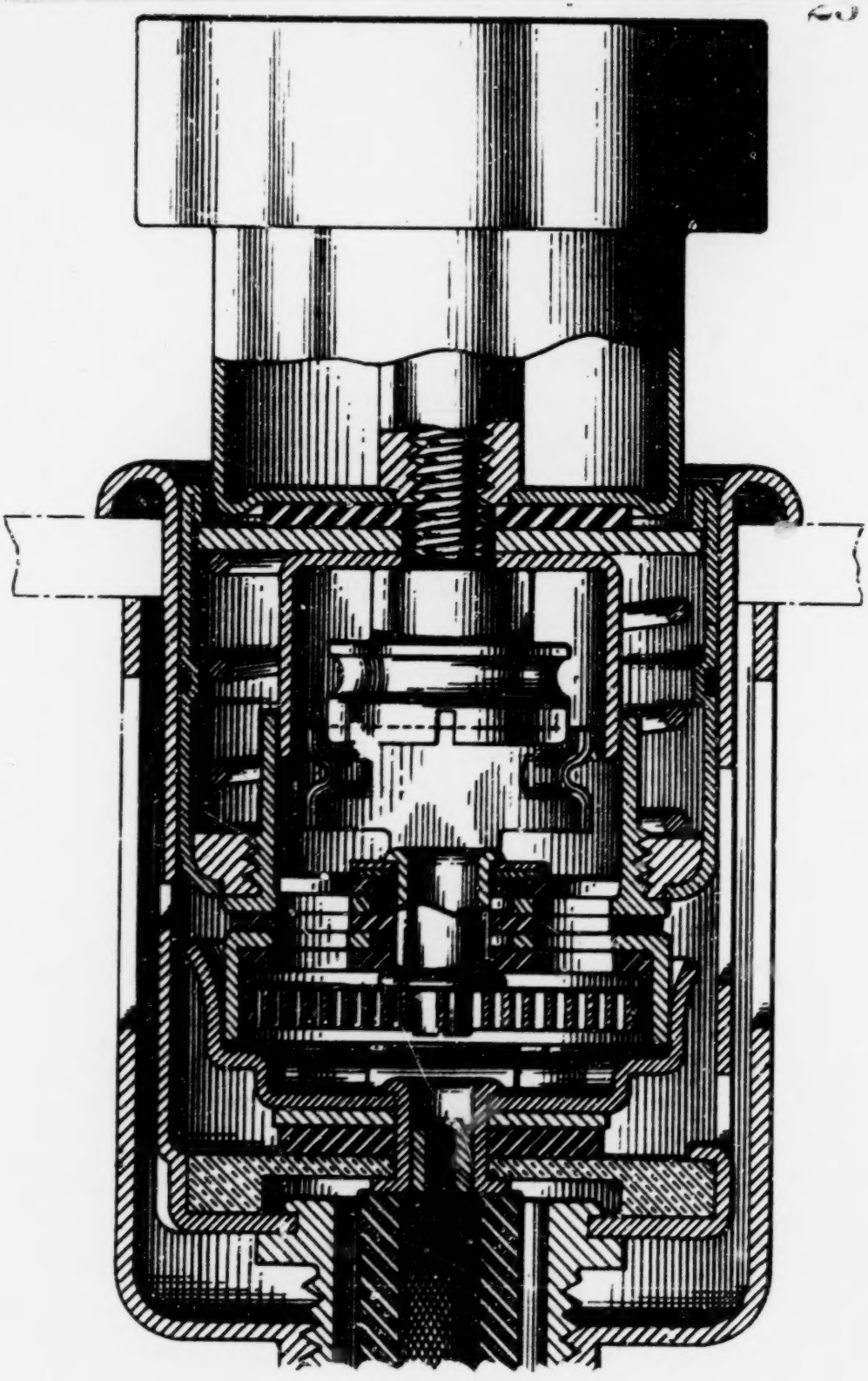
As at present advised, the claims of the three patents in suit on which plaintiff will rely for its charge of infringement are as follows:

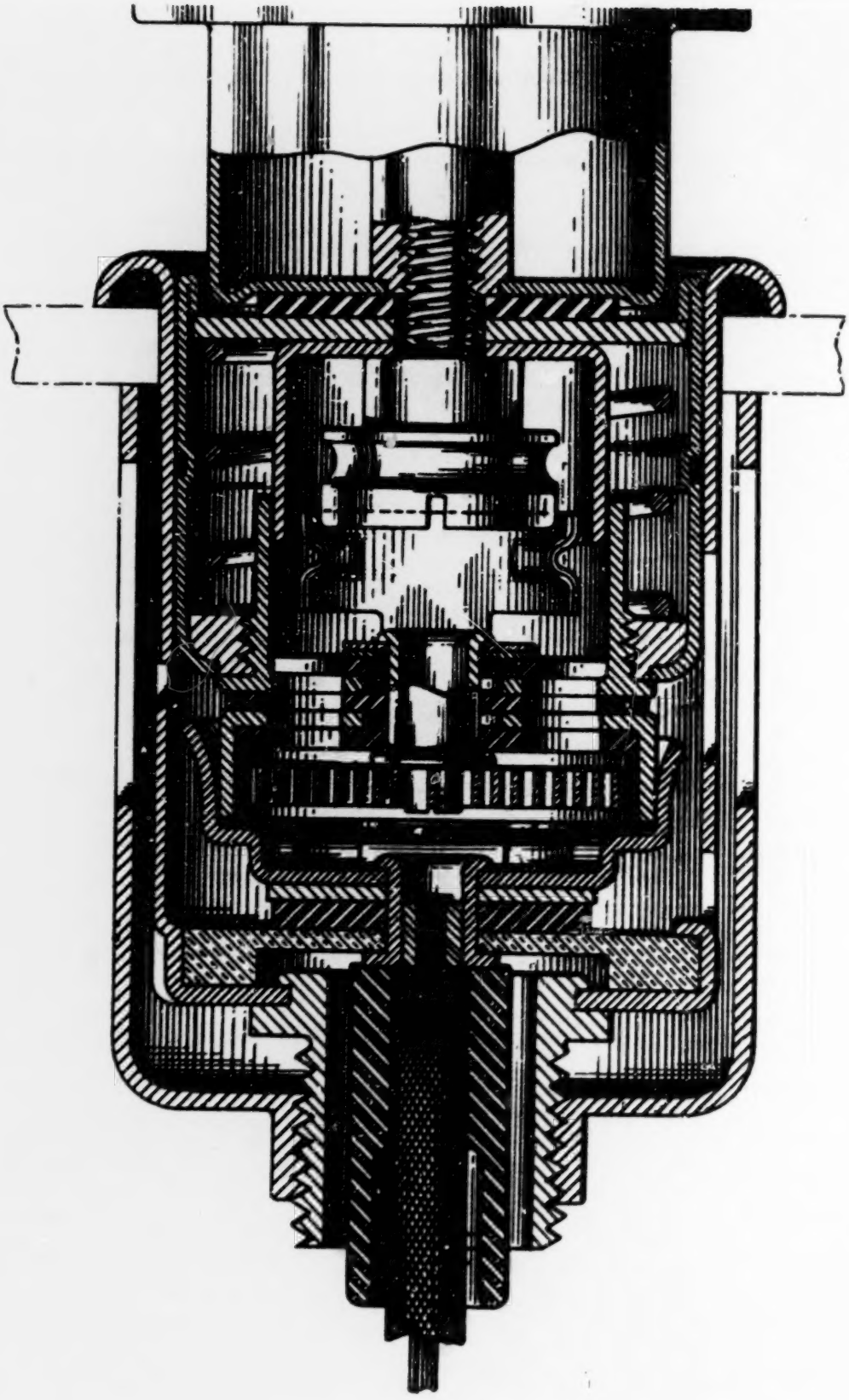
Mead Patent No. 1,736,544—
Claims 1, 2, 3, 11 and 12;
Johnson Patent No. 2,129,374—
Claims 1, 4, 5 and 7;
Cohen Patent No. 2,140,311—
Claims 14 to 26 inclusive.

The Automatic Devices Corporation,
By Henry M. Huxley,
Of Counsel.

Receipt of copy of the above Plaintiff's Bill of Particulars is Acknowledged, this 9th day of January, 1939.

Bernard A. Schroeder,
Of Counsel for Defendant.





41 And on, to wit, the 16th day of March, 1939 came the parties by their attorneys and filed in the Clerk's office of said Court their certain Stipulation in words and figures following to wit:

42 IN THE DISTRICT COURT OF THE UNITED STATES.
* * (Caption 16188) * *

Filed Mar. 16, 1939.

STIPULATION.

It Is Hereby Stipulated, by and between the parties to the above-entitled suit, as follows:

1. That regular printed copies or photostatic reproductions of the specifications and drawings of United States and foreign Letters Patent, or any printed publications, shall be admitted, subject to correction of errors, as satisfactory proofs of such Letters Patent and printed publications, without certification, and that the printed dates of filing, sealing, publication, or delivery, appearing thereon, shall be taken, subject to correction of errors, as establishing such dates; and that unless evidence to the contrary shall be introduced, the descriptive matter (other than the claims) and the drawings of United States Letters Patent shall be taken to be the same as the descriptive matter (other than the claims) and the drawings of the application as originally filed.

43 2. That the incorporation and residence of the parties is as alleged in Paragraph 1 of the Bill of Complaint.

3. That prior to the filing of the Bill of Complaint, the plaintiff was and now is the owner of the entire right, title and interest in and to United States Letters Patent No. 1,736,544, issued November 19, 1929, to Herbert E. Mead, assignor to S. T. Jessop Co., Inc., of Chicago, Illinois; No. 2,129,374, issued September 6, 1938, to Arthur A. Johnson, assignor to the plaintiff herein; No. 2,140,311, issued December 13, 1938, to Joseph H. Cohen, assignor to the plaintiff herein.

That the entire right, title and interest in and to the Mead Patent No. 1,736,544 from and after the date of issuance was as follows: On April 25, 1934, S. T. Jessop Co., Inc., assigned the entire right, title and interest in and to said Letters Patent, together with all right to sue for and recover damages and profits arising out of past and future infringements, to Paul R. Kirchner, of New York, N. Y.;

on May 3, 1934, the said Kirchner assigned all right title and interest in and to said Letters Patent No. 1,736,544, together with the right to sue for and recover all damages and profits on account of past and future infringements, to Casco Products Corporation, a corporation of Connecticut; on October 29, 1934, said Casco Products Corporation assigned all right, title and interest in said Letters Patent No. 1,736,544, together with all right to sue for and recover damages and profits on account of last and future infringements, to Joseph H. Cohen, of Bridgeport, Connecticut; on February 6, 1936, said Joseph H. Cohen assigned all right, title and interest in and to said Letters Patent
44 to the plaintiff herein; and on May 1, 1936, The Automatic Devices Corporation granted unto Casco Products Corporation, a corporation of Connecticut having its principal place of business at Bridgeport, Connecticut, a non-exclusive right and license to manufacture, use and/or sell throughout the United States and territories thereof, and the Dominion of Canada, automatic cigar lighters embodying the inventions of said Letters Patent No. 1,736,544. and embodying the inventions of any applications for patent on automatic lighters or patents eventuating thereon, then owned, or at any time thereafter owned or controlled, by the plaintiff herein, to the full end of the term or terms for which said patents or reissues or extensions thereof have or shall be granted.

4. That prior to the filing of the Bill of Complaint and Supplemental Bill of Complaint herein, and within six years prior thereto and subsequent to the issuance of Letters Patent No. 1,736,544, No. 2,129,374 and No. 2,140,311 in suit, the defendant manufactured and sold cigar lighters exemplified by the drawing attached hereto and marked "Plaintiff's Exhibit 1" and by the specimen of cigar lighter submitted herewith and marked "Plaintiff's Exhibit 2".

5. That for its charge of infringement, plaintiff relies upon Claims 1, 2, 3, 11 and 12 of the Mead Patent No. 1,736,544; Claims 1, 3, 4, 5 and 7 of the Johnson Patent No. 2,129,374; and Claims 3 and 14 to 26 inclusive of the Cohen Patent No. 2,140,311.

Henry M. Huxley,
Of Counsel for Plaintiff.
Bernard A. Schroeder,
Of Counsel for Defendant.

March 16, 1939.

122 And on, to wit, the 5th day of October, 1939 there was filed in the Clerk's office of said Court a certain TRANSCRIPT OF TESTIMONY in words and figures following, to wit: Filed Oct. 5, 1939.

123 Whereupon the plaintiff to maintain the issues on its behalf, introduced the following evidence:

Mr. Huxley: I will introduce first, if the Court please, a stipulation which covers the usual use of uncertified copies and so forth, incorporation of the parties, the ownership of the patents, the fact that under the Mead patent and the other patents in suit which are owned by the plaintiff here, the Automatic Company, a non-exclusive license was granted to the Casco Products Corporation, which was a manufacturer. One paragraph covers the manufacture and sale by defendant of the accused cigar lighters which are shown in the drawing which is attached to the stipulation and also which are exemplified by an actual cigar lighter, Plaintiff's Exhibit 2. The fifth paragraph provides the claims that are relied upon by the plaintiff for its charge of infringement, and which are the claims which I marked 124 on the extra copy which I gave to your Honor.

I will introduce this stipulation in evidence, and also in connection with it the drawing that is attached to it, Plaintiff's Exhibit 1, and the actual cigar lighter, which is Plaintiff's Exhibit 2.

The Court: They may be admitted.

(The exhibits were so marked.)

Mr. Huxley: At the same time,—I think there is no question about this—I will introduce in evidence as Plaintiff's Exhibit 3 a speciman of the regular cigar lighter which is manufactured by the plaintiff's licensee here, the Casco Products Corporation.

The Court: It may be admitted.

(The exhibit was so marked.)

Mr. Huxley: I will also introduce the formal notices of infringement,—these are carbon copies but I take it there is no question of the authenticity. The first is a letter dated June 28, 1938, addressed to the defendant here charging infringement of the Mead patent. The second one is a letter of December 14, 1938, supplemented by one of December 15, 1938, charging infringement of the Cohen and Johnson patents. I will introduce the letter of June 28, 1938

as Plaintiff's Exhibit 4, and the one of December 15,
125 1938 as Plaintiff's Exhibit 5. In Plaintiff's Exhibit 5 there are two letters, one of December 14, 1938 and one of December 15, 1938.

The Court: They may be admitted.

(The exhibits were so marked.)

Mr. Huxley: I call Mr. Johnson.

ARTHUR A. JOHNSON, called as a witness on behalf of plaintiff, having been first duly sworn, testified as follows:

Direct Examination by Mr. Huxley.

Q. Mr. Johnson, will you state your name, residence and occupation?

A. My name is Arthur A. Johnson; I live in Bridgeport, Connecticut; I am by profession a patent attorney.

Q. You are also president, are you not, of the Automatic Devices Corporation, the plaintiff in this suit?

A. I am.

Q. Will you state briefly your experience in connection with patent matters and also in connection particularly with patents and other matters connected with cigar lighters?

A. I have been engaged in doing patent work since
126 1912. In 1918 I was registered in the United States Patent Office as a patent attorney. After that I spent a year and a quarter in the patent office examining applications, and after leaving the patent office I have been engaged continuously in the work of filing and prosecuting patent applications, making infringement and validity investigations and reports and giving advice to clients with regard to patent matters generally.

Since 1924 I have done a great deal of work in connection with cigar lighters, first for my client the Casco Products Corporation and Mr. Cohen, and now also for Automatic Devices Corporation, and in this work I have made some inventions, watched the development of cigar lighters and participated generally in experimental and development work in connection with them. This work has taken me into the factory and laboratory of Casco Products Corporation many, many times. I have seen the cigar lighters tested.

Mr. Huxley: I will introduce in evidence a book con-

taining the three patents in suit, the Mead patent No. 1,736,544, the Johnson patent No. 2,129,374 and the Cohen patent No. 2,140,311, as Plaintiff's Exhibit 6.

The Court: It may be admitted.

(The exhibit was so marked.)

127 Mr. Huxley: Q. Now, referring to the Mead patent, which is the first one in suit, will you explain briefly the construction and operation of that, and in connection with it you may refer to any charts you have or animated models showing the construction of it.

A. I have here a chart showing an enlargement of sheet 1 of the Mead patent 1,736,544, and another chart showing sheet 2 of that patent.

The device of the Mead patent comprises two principal parts, the base or socket member, which is shown in Fig. 1 comprising a metal plate 31, a plate of insulation 33, a back which is colored brown in this chart, and a tubular socket.

In that holding device the socket constitutes one side of the circuit, or in other words the ground, and the other side of the circuit connected to the source of current comprises this green contact 52 which has this depression 53.

The igniting unit is generally plug shaped and has a shell 65 colored yellow. It has a knob or handle at one end numbered 61, and at the other end as shown in Fig. 15 it has a resistance wire or heating element colored red on the chart. The outer convolution of the resist-

128 ance wire is connected to a yellow cup shown in Fig. 13, and that has contact with the shell 65, which in turn contacts with the brown socket when the plug is in the socket.

The center of the resistance wire is connected by a blue pin 84, and this screw threaded member to a laterally projecting pin 75. That pin comes out through the hole in the yellow sleeve so as not to contact with it, and reaches out laterally from the plug. The assembled plug is shown in Fig. 8.

Now, when you put this igniting unit in to the socket you line this pin 75 up with slot 43 and push it into the socket, and in that position it is ready to move to the energized position. You leave it in that position until you are ready to use it.

Now, when you want to use the cigar lighter you simply turn this knob 61 which gives arcuate movement to the pin 75, bringing the pin 75 over into contact with the

green contact. The rest of the plug actually rotates on the axis of the plug, but the functional thing, the functional movement is the pin 75 which is given an arcuate movement into engagement with the green contact.

When the plug is left in that position, I mean when
129 it is moved into that position it is left. The driver can take his hands off the plug and go about his business of driving the car.

When the plug becomes heated the heat from the heating element in the modification, or rather the form of the invention I just described, is transmitted through the pin 84 up to the pin 75, and otherwise in any way it can get this heated, this bimetallic spring 54. That spring is made up of two pieces of metal welded together and rolled out, of proper thickness, and the coefficient of expansion of one metal is different from the other, so that as the metal heats up one pulls to the other side. That is, one tries to get a little longer than the other, and there is no way of doing it except to go around a curve. That's a common thing, this thermostatic metal. It has been old for many, many years.

When the thermostatic piece 54 heats up it moves away from the green contact piece 52 and releases the tension of the green piece so that the blue member may swing back arcuately away from that retaining position under the influence of the spring in the base, the spring 47.

I mentioned that this shell 41 has a slot through
130 which the pin 75 extends. The shell 41 is pivotally mounted on this base, the bottom up here, and it is coupled for movement with the plug by a nib 67—you can see it best on Fig. 8—which extends into a slot in the socket member. That's a slot on the other side of the bottom member. One side has a slit for the pin 75, and the other side has a slit for the driving lug 67. When you rotate the plug with its nib 67 you also rotated this brown sleeve. The brown sleeve is connected to the returning spring 47, so that as soon as the blue pin is released from the green contact that spring returns the device to the starting position, opening the circuit between the blue and the green, and the operator, the user, may then withdraw the plug and apply it to the cigar or cigarette, the red coil of the plug in the meantime having been heated to the desired degree as determined by this thermostatic member.

This is a retaining device. This blue pin and the green

contact constitutes a retaining device for holding it in the circuit until the heating element is ready for use.

Mead described another modification of his invention.

He says that instead of the coil spring 47, a plain
131 coil spring 47, you can use a bimetallic spring shown
in Fig. 6. Here again we have these two pieces of metal, and when they heat one piece tries to change the shape of the other, and that movement results so that increased heat pushes that thermostat down into the spring and places the spring 47 under greater tension, and so that when the heat impinges upon the bimetallic spring it tends to return the plug, and when it gets enough probably it does return it.

There is sort of a tug of war going on between the parts trying to return it, that is, the spring 47 and this different shaped spring 52 trying to stop it from going back, and when the condition is just right the tug of war is overcome one way and it opens the circuit.

I have an animated model here that I constructed using the photostat of the patent drawing which shows the operation. This is the igniting unit showing the heating element on the back side. There is the driving lug I spoke of. Here is the pin going through the slit in the brown sleeve.

Q. That's the blue pin?

A. That's the blue pin. When you operate this you move this pin arcuately and it jumps into that position
and it stays there until the igniting unit gets hot and
132 as the igniting unit gets hot something like this happens, the orange spring moves away and the blue pin finally gets away from the green contact.

Q. Then what do you do with the igniter unit?

A. You lift it out and apply to the cigar or cigarette. As a matter of fact you can also light a pipe because he has this end of the plug reduced.

May I have the sample of the Mead device, please?

Q. I am handing you a device, and will you tell what, if anything, you know about this?

A. I first saw this old device which I am holding in my hand about 1929 and 1930 at the plant of the Casco Products Corporation. On that occasion Mr. Cohen and I were looking for some models in connection with another entirely different matter and we picked this one out of the drawer and discussed the possibilities of this lighter. I went to the museum the other day and got it where I expected to find it, in the drawer of wireless type light-

ers. I understand that this lighter was put on the market by the first assignee of the Mead patent, but this gives you an idea of the construction of Mead possibly a little better than the drawing. You see the end of it is small enough to go into a pipe. It goes into the socket
133 like that, and you rotate it to bring that pin over into position to engage the detent, then when the heating element gets hot enough this bimetallic spring down here in the base pulls on the igniting unit and rotates it back that is, it rotates it so the pin leaves the detent, and then it is hot and ready to be used.

Q. You have actually tried that heating device?

A. Yes, sir. I tried it yesterday.

Q. How does it work?

A. Very well.

Mr. Huxley: This device identified by the witness is offered in evidence as Plaintiff's Exhibit 7.

The Court: That may be admitted.

(The exhibit was so marked.)

The Witness: I have another animated drawing here which simply indicates how the igniting unit is slid into place. These two animated devices taken together show the operation. First, you slide it in and then you rotate it.

Mr. Huxley: The two charts identified by the witness are offered in evidence as Plaintiff's Exhibits 8 and 9.

The Court: They may be admitted.

(The exhibits were so marked.)

Mr. Huxley: And the two animated models are
134 offered in evidence as Plaintiff's Exhibits 10 and 11.

The Court: They may be admitted.

(The exhibits were so marked.)

The Witness: In the sheet 2 construction of the Mead patent the operation is substantially the same. There is a little different shape to the parts. Fundamentally the principle and mode of operation is substantially the same. I don't believe it requires any detailed discussion.

Mr. Huxley: Q. Now, will you pass next to the Cohen patent in suit and tell us how that construction operates?

A. I have an animated model here of the sheet 1 construction of the Cohen patent 2,140,311, which I had made from a photostat of the patent, showing the way in which the device works.

In the Cohen patent again, as in all wireless cigar lighters, we have the two principal parts. We have the socket

which is colored brown in the chart and the plug, which includes the red, blue, yellow and uncolored body portion.

Q. Are there two terminal members on the stationary device, the holding device?

A. The brown sleeve itself is a terminal and the
135 thermostat spring 32 constitutes the other terminal.

In this device there is a plate which slides in the socket and that plate carries a purple contact on its outer part which engages with the blue contact on the heating element part or igniting unit. When you push in on the plug sort of a collar button arrangement on the inside of that plate, that is, the shouldered stud, is brought into engagement with the orange bimetallic fingers 32, and they grip onto it, they claspingly engage it, and that closes the circuit, the circuit being from brown to the yellow, to the red heating element, to the blue contact, the purple contact, the purple collar button and the orange bimetallic members and the green sleeve, to the supply wire.

When the resistance element gets hot the heat is transmitted through this construction and heats up the bimetallic fingers causing them to expand and let go of the collar button.

Now, when you push this plate in to bring the purple stud contact into engagement with the orange contacts you compress the spring 48, so that when the orange contacts move out the spring 48 simply pushes the purple contact away from the orange, and the circuit is opened.

136 In this construction the entire critical part of the device is located in one member, one of the two principal parts that I referred to in the beginning.

Q. What are those two principal parts?

A. The base or socket and the plug or igniter.

Q. You remarked that these critical elements were in one of the members?

A. Oh, yes. With this construction it is possible to take duplicate plugs of this kind and substitute one plug for another. In other words, it permits you to mount the socket on the dash-board of the automobile during the course of manufacture and put this plug, or any other plug like it, in place. Now, the reason that is important is that these t. s are rather critical, and they have to be adjusted quit. ritically.

Q. That is, what parts have to be adjusted quite critically?

A. The tension of the spring has to be considered in

relation to the tension of the bimetallic springs, and the bimetallic springs have to be properly shaped in relation to the shouldered stud.

Returning to the Mead construction, by comparison we have that tug of war here that I spoke of, and if
137 this pin should be a little short as it might be if you were making this in a screw machine, gradually the tools wear and one gets a little shorter than the other. It is hardly perceptible between one and the other, but after a while there is quite a difference. If that pin should get a little short and this spring a little weak, and this spring down in the base should get a little weak it would make quite a difference, so if you adjusted this device, the igniting unit of this device as against the holding device of Mead, and then you took another igniting unit which is adjusted for another holding device and brought it over in here unless you did the work very accurately and checked all these parts, as we have found it necessary to do in the commercial construction that Casco employs, you just have all kinds of trouble.

By putting the critical part, that is, this thermostatic control switch, if you want to call it that, in the holding device you can use any of the plugs, that is, any plug made to fit it. I don't mean to say you can take a Sinko plug and put it in Cohen's socket, however, but I mean if you made these things generally to fit each other.

Q. Now, suppose the bimetallic orange spring 32
138 should open so that the circuit is opened, that bimetallic spring being heated is there any way of closing the contact and reestablishing the circuit?

A. Oh, I forgot to mention that point. In this device here when the bimetallic springs stand out away at the shouldered stud, as shown in double dotted lines in Fig. 6, as they will do when the device gets hot,—I think I can demonstrate it with this animated model, and this animated model is taken from the Fig. 8 construction of Cohen. When these orange bimetallic springs are expanded due to the heat, you would have to wait for the device to cool off in order to get another light. That is, if I wanted to light my cigarette and you were the driver and I took too long in lighting my cigarette you could not light yours, you would have to put it back in the socket to get another light. Well, in this device if the bimetallic springs stood out like that you would not be able to re-engage. But part of Cohen's idea was to make it possible through an auxiliary contact—that's the

contact 79—to close the circuit even if the springs are out, but of course under those circumstances you have to hold it in by hand.

Q. Now, will you contrast briefly the location of the orange bimetallic member 32 as shown in sheet 2 of
139 the Cohen drawings as compared to what is shown in sheet 1?

A. Well, on sheet 1 the bimetallic arms are mounted on the bottom of the base and project out, with the collar button arrangement mounted on the sliding plate. In the Fig. 8 construction the bimetallic springs are mounted on the sliding plate and the collar button is mounted on the stationary part. The conduction of heat here would be better, that is, there would be more chance of accurately calibrating this thing, you would not have so much loss of conduction through the other parts of the device.

Mr. Huxley: The two charts identified by the witness are offered in evidence as Plaintiff's Exhibits 12 and 13, and the one animated model as Plaintiff's Exhibit 14.

The Court: They may be admitted.

(The exhibits were so marked.)

Mr. Huxley: Q. Now, will you similarly explain to us the construction of the Johnson patent?

A. I have a chart here showing an enlargement of the sheet of drawings in the Johnson patent. In this cigar lighter again we have the well or socket colored brown in the chart, and the plug, which is shown removed from the socket in Fig. 4. The contacts in the socket
140 are the brown socket wall and the green contact member. In this case you will note that the contact member has a flange. In distinction from the other contacts here we have a rigid flange.

On the plug member we have a main body portion 27 with a handle 28, and around that there is the ejecting spring, the spring that makes the thing come out when you are ready for it. Then, at the forward end we have a yellow metallic member carrying the resistance wire 31. The resistance wire is carried in a metal plate on the body of the heating element, which is yellow, the plate and the resistance wire are tied together with this metal rivet.

Now, here instead of having the bimetallic member located on the base it is located on the igniting unit, and not only on the igniting unit but it is also located right on the heating element.

Q. What comprises the heating element?

A. I just stated that, Mr. Huxley.

Q. Oh, I see.

A. So that the heating element and the bimetallic contacts are a structural unit. This heating element is removably mounted on the body of the igniting unit by screw threads as I can demonstrate with an animated
141 model which I have, and when it is desired to remove the heating element for any reason the heating element is simply screwed out of the body, and with it go the bimetallic springs, so if you calibrate this bimetallic spring to the heating element and you put in another heating element which is calibrated to that other, I mean having bimetallic spring calibration to that other resistance you are going a step forward. Still, you have to consider you have a spring in here that has some part at least to do with that tug of war I mentioned.

Q. That is another spring on the plug?

A. On the plug. Anotner advantage of that construction is that the bimetallic spring being directly carried on the heating element gets the heat very fast, and it can be quite accurate. There is practically no loss with a construction of this kind, that is, by conduction to other parts.

In this case both the plug and the socket are different from the preceding ones because here we have this rigid flanged plate. We don't need any tricky construction here, we simply go in and push over on that solid part and the bimetallic spring holds until the heating wire is hot. The bimetallic spring may or may not con-
142 stitute a part of the contact here because the blue member actually contacts with the green contact.

Q. Now, in connection with the Johnson construction will you tell us about the sleeve member 41 and where that is when you put that plug into position and when you move it to closed circuit position?

A. The sleeve 41, when you insert the plug into the socket after having used it the sleeve has a flange 42 which engages an edge on the socket so that it becomes stationary from that time on and when you push in the plug you simply compress the springs. This animated model shows it very clearly. This represents the sleeve. This back member here represents the sleeve, and it is pushed in that far and then it stops. Then, as you push in there is relative movement between this sleeve and the body. In other words, the sleeve becomes stationary and the main body moves, and it stays in that position, of

course, until the thermostat releases. I have got rubber-bands on there and they act like slingshots.

Mr. Huxley: The chart identified by the witness is offered in evidence as Plaintiff's Exhibit 15 and the animated model as Plaintiff's Exhibit 16.

143 The Court: They may be admitted.

(The exhibits were so marked.)

Mr. Huxley: Q. Have you a chart, and at the same time you may refer to any animated model you may have as a specimen of defendant's device identified as Plaintiff's Exhibit 2, and if so will you describe what defendant's accused construction is here?

A. I have a chart showing defendant's accused construction.

Mr. Huxley: I will mark that for identification as Plaintiff's Exhibit 17.

(The chart was so marked.)

A. (Continued.) Showing the plug and socket members assembled in the upper figure and separated in the lower figure. Here again we have the socket members colored in brown, with the other terminal of the socket colored in green. As you see in the lower figure that has some fingers or blades projecting out so as to make a good contact with a blue plate on the igniting unit.

I think I stated that the brown sleeve constitutes one side of the circuit. The igniting unit has a yellow sleeve, at the forward end of which there is a nut, and in that nut there is screwed another yellow sleeve carrying
144 the blue plate and the red resistance coil. The blue plate, the red resistance coil and this inner sleeve constitute the heating element, and that's removably mounted on the igniting unit, as I will show in a few minutes.

Within the yellow sleeve is a spring, and that spring engages, one end engages the forward nut, and the other engages a plate carried by another sleeve, which is colored yellow. The inner sleeve and the outer sleeve, both being colored yellow, telescope on each other and form a guide for the relative movement of those two parts. The inner sleeve, the part which it engages and the knob are all secured together as one piece.

The circuit through the igniting unit here is closed and opened to bring the device into use, and for that purpose the current coming through the grounded sleeve engages—

Q. The grounded brown sleeve?

A. The grounded socket we will say, the brown socket,

through the yellow sleeve, then through the central stud contact, sort of a collar button arrangement again, and then it engages, or may engage when you push it in this orange bimetallic member or contact, the orange or
145 bimetallic member being connected to the resistance wire by this tubular rivet.

Q. Blue.

A. Blue, which is spun over there, and that unites all these parts, the orange part, the blue part, the yellow part, being the base for the heating element, the blue part containing the resistance wire, and the resistance wire itself.

I have an animated model that shows that a lot better than the chart. This model has the two essential parts of your wireless cigar lighter, the base and the igniting unit, and they slide together and you bring them into that position, which is the normal position. Then, when you want to use the device you push in on the igniting unit and close the circuit between the collar button arrangement and the bimetallic spring. When the device is ready for use, and hot, the arms spring apart. These arms in this model are not exactly as in the device because in the device they form two semi-cylindrical members, but this is made in one plane to show the operation. In other words, this device shows that the contact on the igniting unit is moved into engagement with another contact on the igniting unit to close the circuit.

146 Now, the heating element here again is removable.

Q. That heating element is what, state what part that is?

A. The yellow, orange and blue parts. That screw was threaded in here, and that you will see carries the bimetallic members in permanent heat conducting relation with the heating element, and as a unit.

Now, in this device also after you have once used the igniting unit and it has become hot this spring may be so weakened that the igniter will not hold in for another light. They stand out again, but when that happens you simply push it in still further and hold it in by hand, and that closes the circuit between the auxiliary contact, being at the end of the blue tubular rivet, and the end of the collar button stud-like contact.

May I demonstrate that with the device?

Q. You are referring now to Plaintiff's Exhibit 2?

A. Yes. I think I can show it here. There is the removable heating element, renewable heating element

with its bimetallic spring. There is the collar button arrangement in there, and the ejecting spring, and when those springs stand out from each other you simply
147 hold them in. If you push it in it will jump right out if they are hot, but if you want to get your light under those circumstances you simply hold it in by hand the same as in the Cohen construction.

Mr. Huxley: The chart identified by the witness is offered in evidence as Plaintiff's Exhibit 17 and the animated model as Plaintiff's Exhibit 18.

The Court: They may be admitted.

(The exhibits were so marked.)

Mr. Huxley: Q. In order that we may be perfectly clear on this, in the chart, Plaintiff's Exhibit 17, in the upper figure it is correct, is it not, that the igniter unit is shown as inserted in the holding device but in open circuit position?

A. That's right.

Q. And to move it to closed circuit position the outer yellow sleeve would stay stationary and the inner yellow sleeve with the yellow part which you have called the collar button arrangement would move to the left so that the bimetallic member is engaged, holding the parts in circuit closing position until the bimetallic member expands and automatically releases the parts so that they then move under the tension of the yellow spring back into the position shown in the chart, is that cor-
148 rect?

A. Yes, that's correct. The parts that move to close the circuit move back after the bimetallic fingers expand.

Q. Now, will you put the chart of the Mead construction up so we can see that at the same time?

A. (Witness does as directed.)

Q. There are one or two parts I would like to have you identify, if you will, first on the Mead construction and then on the defendants device. Now, in the Mead construction what parts comprise the base member?

A. The brown parts in Fig. 1, that is, the shell and the angular plate here, the plate of insulation and the plate 31.

Q. Now, refer to Figure 15.

A. The brown parts?

Q. Yes, precisely, the brown parts. Will you explain how the brown part is connected to the source of current?

A. Well, in Figure 15 it is connected to a source of current by the separate wire 57.

Q. And the green element, how is that connected?

A. That is connected through a source of current by the wire 58.

Q. Does the green constitute the other terminal 149 of the base member?

A. Yes, sir.

Q. Now, on defendant's device does the base member constitute the brown and the green parts similarly?

A. Yes, the brown and the green parts. The brown here is connected to the source of current through the dashboard which is grounded, and connected to the battery, and the green part is connected by the separate wire.

Q. Now, the heater member broadly speaking is what of the two devices?

A. Well, it is the parts shown in Fig. 8 of Mead, that is, the yellow, the blue and the uncolored knob, and it is the part shown in the lower right-hand portion of Exhibit 17.

Q. Will you show us exactly where the electric heater is in the two cases?

A. The heater is,—in defendant's accused device Plaintiff's Exhibit 17 is the coil of resistance wire which is colored red, and in the Mead patent it is the coil of resistance wire which is colored red in Figure 15.

The Court: We will have a fifteen minute recess.

(A short recess was taken.)

150 Mr. Huxley: Q. Will you explain in both the Mead patent and in the defendant's construction how the heater member is movable between the energized closed circuit to the heater and the off position to interrupt the circuit.

A. Well, in the Mead patent, as I have said, by rotating the manually operable part of the igniter, that is, the plug 61, you move the pin 75 arcuately into engagement with the spring 52. That is the movement referred to. The whole plug rotates.

There is no significance to the fact that this coil happens to rotate on this axis. The significant thing is that the blue contact here moves arcuately.

In defendant's device, when you push in on this projecting part of the knob you move the collar button contact into engagement with the orange bi-metallic contacts. There is a relative movement in the accused device

between the inside yellow parts and the outside yellow parts, the same as in Mead you have relative movement between the shell part of the holding device which rotates, and the stationary part, which is also colored brown.

Q. The automatic means for withdrawing the heater member from the on to the off position is what?

151 A. That is the coil spring in the defendant's accused device coupled with the releasing action of the bi-metallic fingers.

Mr. Huxley: The latter being colored orange and the former being colored yellow.

A. In the Mead patented construction it is in the coil spring 47 or 47-A, depending on which one you use, coupled with the releasing action of the orange thermostatic spring 54.

Q. Now will you put up the chart of the Cohen patent? There are one or two elements I would like to have you identify specifically.

A. (Witness does as requested.)

Q. Will you point out in Cohen whether or not there is a switch member with relative movable contacts?

A. The switch member is the parts including the orange bi-metallic springs and the green collar button stud-like contact.

Q. Where do you find it, if you do find it, on defendant's accused device?

A. In defendant's accused device we have the orange bi-metallic springs and the yellow collar button contact.

Q. Will you point out any shouldered stud contact or a hook contact of the Cohen patent?

152 A. In the Cohen patent the stud is a green part 66′ and the hooks are the bi-metallic springs which have parts bent in 65′, shown in Figure 10.

Q. You are referring particularly to sheet 2 of the Cohen drawing?

A. That is correct.

Q. Do you find anything similar in the defendant's construction?

A. In defendant's construction we have the shouldered stud contact, which is the yellow collar button-like contact and the orange springs, which have projections that hook into the annular groove in this construction on the yellow contact.

Q. Now will you point out on Cohen when the bi-metallic

spring member, under the influence of heat, is spread out, and where and in what way there is an auxiliary contact?

A. Referring to Figure 14, this action is shown. The bi-metallic springs 34′ have been extended by the action of heat and would not hook on to the shoulder 67′, but when the igniting element is held in by hand the ends of the spring contact with the flange 79, which constitutes the auxiliary contact.

Q. Now we will refer to defendant's device. Do 153 you find anything similar there?

A. In defendant's device the end of the yellow contact pin engages the blue tubular rivet, even though the bi-metal members are spread apart. By holding this in by hand, holding this knob in by hand, the circuit is closed between the yellow and the blue. The blue constitutes the auxiliary contact.

Mr. Huxley: That is all.

Cross-Examination by Mr. Wiles.

Q. I am not sure that I understood, when you were giving your qualifications, just the kind of work you have been doing. You have been doing, as I understand it, patent soliciting in the Patent Office; is that correct?

A. That is correct.

Q. And you have been studying patents and giving opinions on infringements?

A. Yes, sir.

Q. And studying patents and giving opinions to clients on the validity of patents?

A. Yes, sir.

Q. And advising whether or not suits should or 154 should not be brought?

A. So far as the patent goes. Not so far as the commercial aspect is concerned. I would advise against bringing suit if it was avoidable.

Q. You have been working on license contracts connected with patents?

A. Yes, sir.

Q. And drafting them?

A. Yes, sir.

Q. Serving infringement notices?

A. Yes, sir.

Q. On behalf of clients?

A. Yes, sir.

Q. In fact, you have been doing all the work of a patent

lawyer, except that actually before the United States Courts; is that correct?

A. Well, that is for you to say. I have told you what I have been doing. I have never appeared in court as counsel because I am not a member of the Bar.

Q. But you have done every other thing that a patent lawyer commonly does; is that right?

A. When you say "commonly does," yes, sir.

Q. Now I want you to tell me something about what this plaintiff company is, what relations has it with the

155 Casco Company?

A. The plaintiff company holds these patents in suit and some others, some are on cigar lighters, some are not, and the plaintiff company licensed the Casco Products Corporation with a non-exclusive, irrevocable, non-transferable license.

Q. Royalty free?

A. I would not say it was royalty free. In lieu of royalties, Casco Products Corporation pay the development costs and prosecution costs of Automatic Devices Corporation.

Q. What is the ownership of the plaintiff, who owns it?

A. It is a corporation.

Q. Who owns the stock?

A. Well, I own stock.

Mr. Huxley: I object to this as immaterial.

The Court: I do not get the materiality of it.

Mr. Wiles: I think we are entitled to show, in essence, if it is a fact, that this is the Casco Company.

Q. As a matter of fact, the patent in suit was first owned by Cohen, was it not?

A. First owned by Casco, then by Cohen?

Mr. Huxley: That is all stipulated.

156 Mr. Wiles: Yes. All right.

Q. And it was turned over to your company. Was there any consideration paid by the plaintiff in taking over this patent?

Mr. Huxley: I object.

The Court: What difference does it make, how does it affect the question I have to decide here?

Mr. Huxley: I am perfectly willing to produce a copy of the license. I thought it was immaterial, but I have a copy if you would like to put it in.

Mr. Wiles: I am not sure that it does necessarily enter into the case. But, on the other hand, it may be we will come to a situation where the equities and behaviour of

the real owner will be important. If this is a subsidiary of Casco Company, we should know it.

The Witness: It is not a subsidiary of Casco.

Q. Who is it?

Mr. Huxley: I object.

The Court: I think I will sustain the objection. There is no such issue raised in this case in any way.

Mr. Huxley: No.

The Court: That would involve this.

Mr. Huxley: There is nothing we have to conceal. It is merely immaterial.

157 The Court: I do not see that it is material at all. The objection will be sustained.

Mr. Wiles: I may have to come back to it. There are some matters here that we may have to go into.

The Court: I do not believe it raises any question involving equity, just a question of validity of the patent, or invalidity, so far as the pleadings are concerned and as far as I am advised.

Mr. Wiles: I will pass it for the moment. Some things may eventuate here that will make it necessary to come back to it.

Q. Turning to the Mead patent, in all of the structures of the Mead patent the socket in which the plug lighter is placed is a movable socket, is it not?

A. Yes, the part that actually embraces the plug rotates with the plug.

Q. And in all of the structures, that is spring-pressed in one direction?

A. Yes.

Q. So that it tends to rotate counter-clockwise in all those cases?

A. Yes.

Q. To go from energizing to non-energizing position the thing snaps back in a counter clockwise direction?

158 A. That is correct; yes.

Q. And to turn it on you rotate the plug-like member and the socket in the clockwise direction?

A. Only part of the socket, not the whole thing.

Q. Will you just look, for instance, at claim 9, which is not here in suit. Is not the thing called the socket in claim 9 the rotatable part?

A. Yes, I realize that might be, because you see he calls for a base member. I thought you were talking about—

Q. I said socket.

A. We have been talking about the whole thing being a

socket. That is correct as distinguished from the base member on which the socket moves; that is correct.

Q. So in all these devices the socket proper, if I may call it that, does rotate in Mead with the plug lighter in it?

A. I cannot call it the socket proper. It is only half of the socket.

Q. Well, the thing that is called the socket in claim 9.

Mr. Huxley. I object to referring to the claim. The point is what the disclosure is here in the specification and drawings.

159 Mr. Wiles: The claims are part of the specification.

Mr. Huxley: I think the question ought to be what is disclosed in the patent.

Mr. Wiles: Q. Turn to line 15 of page 2. What is the thing that is there called a socket?

A. That is the sleeve that receives the plug.

Q. That is the only thing that Mead calls a socket, is it not?

A. I do not think I could answer that without reading the whole specification.

Q. Well, if necessary, read it.

A. On referring to line 19, page 1, where Meads says: "Normally, the socket and the plug are held in a position where no current will flow through the heating coil." There, I think, he is using the term socket generally broader than what you have been referring to as the sleeve.

Q. He goes right ahead and says that the plug and socket are moved to energizing position in the next line?

A. That is right.

Q. Then the thing he called the socket is the movable part, is it not?

A. I cannot say that in view of the preceding sentence.

160 Q. In the sentence you have just quoted it says the socket and plug are held in a position. Then he says,

"If the coil is to be heated for lighting purposes the plug and the socket are moved."

In other words, they are stationary at one time and they are movable at another time. Is it not perfectly plain that the thing there called a socket is the moving part?

A. To try to say what the man meant when he used those words is pretty hard. I can explain the structure but I cannot tell what he meant when he used those

words. To me they sometimes mean the actual rotating sleeve, and sometimes a thing that takes the plug.

Q. The thing that takes the plug is the moving sleeve?

A. And all the rest of it.

Q. Does he not call the other part of it a socket carrier?

A. Yes, and he calls it a base, too.

Q. Is that correct. If you will look at the top of page 2, does he not say that the base comprises a fibre or other insulating plate adapted to be secured to the supporting plate 31?

A. That is right?

Q. That is, the base, and mounted in the center of the fibre plate is a socket carrier?

161 A. That is right.

Q. And then in the socket carrier is a socket?

A. In that use I think he is referring to the sleeve that rotates.

Q. What I am getting to, does he not refer always to this moving part as the socket?

A. I would not want to say always.

Q. Will you find any place where the term socket as used refers to anything but a movable part, the part 41, as he calls it over and over, the socket 41?

A. Everywhere he refers to 41 I have been able to find he calls it a socket.

Q. Does he use the word socket as referring to anything else?

A. In that opening sentence I would not take that to mean that he just meant that one part.

Mr. Wiles: All right. I just wanted to know how you read patents.

The Witness: Well, that is the way I read them.

Q. Despite the fact that in the next sentence he says "the moving part"?

A. That is right. He is speaking about a specific construction.

Q. I understood you to say that it is insignificant 162 in Mead that the heating coil moves during the interruption of the current?

A. That is correct.

Q. That was your statement, was it not?

A. Yes, sir.

Q. Now I wish you would look at claim 12, please.

Mr. Huxley: I object to that question right now. I

think this is a matter of what the construction is, not a discussion of claims.

Mr. Wiles: I am getting at the construction and the claims have always been read as a part of the specification. Our Court of Appeals has held that they are part of the specification.

Mr. Huxley: That is true, but they have also held in many courts that it is not pertinent to discuss what various terms mean in the claims.

Mr. Wiles: I am going after this as a matter of materiality of construction. Here is a witness who volunteers that a certain operation is insignificant. If that operation is brought out in one of the claims in suit, it is far from being insignificant.

The Court: He may answer.

Mr. Wiles: Q. Now turning to claim 12, we find in the second line, the second and third lines, that the 163 call is for a movable heating member?

A. Yes, sir.

Q. And that it has in it an electrical heating unit?

A. Yes, sir.

Q. The heating heating unit there is the coil, is it not?

A. That is right.

Q. When you come to the last few claims, it has automatic means for withdrawing some heating unit from said energizing position, has it not?

A. That is what the claim says.

Q. That is what you said was insignificant?

A. No, sir; the point is this: If you read that claim, in my opinion that is an error on the part of the person who drew the claim, because if you read the claim to mean that the heating element is withdrawn, which is the resistance wire that is withdrawn, it is really inaccurate, because there is no withdrawal movement when in all its positions it moves rotatively in relation to the stationary member.

Q. The heating element does move in the Mead structure?

A. It rotates. I said that it rotates.

Q. When we compare claims 11 and 12, we find in that last element there is just the difference that you are stating is erroneous in claim 12?

164 A. That is right.

Mr. Huxley: I would just like to have my objection stand to all this line of testimony.

The Court: Yes. It seems to me this is more like an argument than cross-examination.

Mr. Wiles: The witness' testimony is largely argument. He says certain things are significant and some are not significant. If he confines himself to how it worked, that would be one thing, certainly, but he does not.

The way counsel examined the witness, he went through a claim and said to the witness, "Now, take this claim," and counsel quotes him an element and says, "Point it out on both devices," and then another the same way, and then he undertakes to foreclose cross-examination about the claims, just exactly what he asked the witness about.

The Court: You may ask the witness.

Mr. Wiles: Q. Counsel asked you, phrasing his language in the language of the claims, about what are the means tending to withdraw the plug from the energizing position in Mead. Now in Mead is it not a fact that the withdrawing mechanism consists of the spring and the rotatable socket?

A. Yes. I did overlook that in pointing out those 165 means. That is correct.

Q. And that would apply wherever that or a similar thing occurs in those claims?

The Witness: Did you ask me a question?

Mr. Huxley: That is asking for a conclusion as to what the terms in the claims mean.

The Court: Yes.

Mr. Wiles: You are quite right. I think you are right.

Q. Mead describes really three thermostatic arrangements, does he not?

A. Well, at least three.

Q. One of them is a thermostatic latch, where the thermostatic member is entirely in the latch?

A. That is right.

Q. And in some of them the thermostat is entirely in the returning spring?

A. That is right.

Q. Or he may have both working together?

A. That is right.

Q. Furthermore, any of those may be heated by the current flowing through them or by heat from the heating element?

A. You are asking me that?

166 Q. Yes. That is true, is it not?

A. I don't believe Mead says that. I think he says that this one, 54, could be heated by the current. Mead says you can divide the current, that is, let part of the current go this way and part of the current go that way and the heat go through that member, that is, the current can go through there (indicating).

I don't believe there is any reference to using this. I do not recall it now.

Mr. Huxley: When you say "this" what do you mean?

A. This coil spring 47 and 47-A.

The Court: I do not think the record will mean much because the witness says "going this way" and "going that way."

You should indicate which way you mean.

Mr. Wiles: Taking the first the form of latch shown in Figure 16, he says definitely that that may be entirely heated by the current flowing through it; that is correct, is it not?

Mr. Huxley: That is on page 3, line 105.

A. Yes, that is right, either the entire amount or part; that is correct.

Q. And in that case the heating could be entirely by means of the electric current?

167 A. Yes, sir.

Q. And not by the heat from the heater at all?

A. Yes, sir.

Q. If that is done, of course the thermostat operation would be just a timing operation, wouldn't it?

A. I am not quite sure whether that would be purely timing, because the resistance, if that is in series, the resistance of the heating coil changes as the coil heats and the quantity of current going through does vary from beginning to end in the operation. I would not want to say unequivocally that it would solely be a matter of timing. It would depend.

Q. As the heating element heated up the current would drop off?

A. That is right, from beginning to end, somewhere.

Q. Then there would be less current toward the end?

A. That is right, and if there was less current going through, the length of time required to heat the member 54 would vary.

Q. But essentially it would be a timing matter, that is, it would take so many seconds to heat up and release, regardless of whether the heating coil was hot or not?

A. It would not be regardless of the characteristics of the heating coil for the change in resistance of the
168 heating coil would change the quantity of current. That is what I am trying to bring out.

In all of these devices you can regulate them so it does take a certain time to bring it to incandescence. If the heating of the wire is too long you can shorten the heating of the wire. There is an ideal situation. You do not want it to take too long.

Q. If you depend on the flow of current through the bi-metal the break does not depend directly on the temperature of the heating coil, it depends on the temperature of the bi-metal as determined by the flow through it?

A. That statement is correct.

Q. For instance, if you take the device and put too thin a wire on, you change the wire in the coil, for example the thermostat would cut off at about the same length of time regardless, I mean substantially unaffected by the temperature of the wire?

A. I would not agree to that. I would have to try that out and find out for myself for the alloys used for resistance wires have various current curves. The resistance does not change in a straight line, so far as I am aware.

169 There is a point where the resistance gradually increases and then levels off again quite a while before you come to incandescence.

I would want to see that other instrument and find out. It would depend on the material you used.

Q. In this sample, Plaintiff's Exhibit 7, this structure is not like anything in the drawings of the Mead patent, is it?

A. I think it is a great deal like it.

Q. It varies in layout, does it not?

A. Yes, there are differences.

Q. Which form of thermostat release does this sample have in it?

A. I looked at that yesterday. I would like to see it.

Mr. Huxley: That is Plaintiff's Exhibit 7 (handing article to the witness).

A. This has the form in which the bi-metallic member is the returning spring, that is, two functions are per-

formed by the same member. This is the bi-metallic coil and as the resistance heats up, heat comes out here and affects these coils and overcomes that tug of war.

Mr. Wiles: Q. Don't you want to correct that last statement? In that device the current travels through the bi-metal, does it not?

170 A. Possibly it does. I hesitated about taking this apart. I think Mr. Mead himself can probably tell you better.

Q. Now look at it. What is the contact fastened to, the lead-in wire?

A. The end of the spring seems to be anchored, the end of this bi-metallic spring seems to be anchored on the same position the contact is on. I cannot say whether that spring is in series or not. I cannot tell. I do not want to take it apart when somebody can tell you who made the thing.

The pigtail is connected to a metal base that runs away in here and I would suspect, without taking it apart, that there would be no purpose in running it into the center if the current started at the bi-metallic spring.

Q. The lead-in wire is in direct metallic contact with the bi-metallic spring, is it not?

A. Yes. That I can see.

Referring to Figure 12 of the Mead drawing, there is a lug that the end of the wire is fastened to and that sort of heads in toward the center. Without taking that apart I should think that is the same situation there.

171 Q. You do not know how the circuit flows in this device, in Plaintiff's Exhibit 7, you cannot trace the circuit?

A. No, I cannot.

Q. In any event, the bi-metallic spring in Plaintiff's Exhibit 7 is outside the movable socket instead of directly under the heating element as shown in the Mead patent where that has a bi-metallic spring; that is correct, is it not?

The Witness: May I have that question?

(The question was read.)

A. In Plaintiff's Exhibit 7 the bi-metallic spring is not directly under the heating element, but the way the question is put I cannot answer yes or no because the movable sleeve there is lanced to provide windows or openings through there and these lugs on the sleeve really extend out as far as the coil.

I think I have made the construction clear.

Q. I would like the record clear, so that we do not have to go back to drawings all the time. The drawing of the Mead patent that shows this spring and this position is Figure 15, is it not?

A. In Figure 15 the spring is not shown as a bi-metallic spring, but that is the return spring of that con-
172 struction.

Q. Is it not stated also that that spring is the same spring that you replaced with a bi-metallic spring?

A. That is right.

Q. The bi-metallic spring of Figure 6 is numbered, is it not, one is 47 and one is 47-A?

A. The two parts, 47 and 47-A.

Q. In other words, the main part of the spring is 47 in both cases?

A. Yes, sir.

Q. Whether it is bi-metallic or not?

A. That is correct.

Q. When it is bi-metallic you add the number 47-A?

A. That is correct.

Q. The bi-metallic spring is supposed to go into the same place as the spring 47, is it not?

A. That is correct.

Q. So they go inside the base of the movable socket?

A. Yes, if you do just exactly that.

Q. I mean as illustrated in the patent?

A. Yes, but here—

Q. Don't let's argue. Can you not answer the question? As illustrated and described in the Mead patent the bi-metallic spring would go into the bottom of the
173 rotatable socket, would it not?

A. Yes.

Q. All right. Now in the sample 7 it has been put outside the socket, hasn't it?

A. As explained before, yes. If you just don't say it extends out beyond the socket it is all right. I can answer that question yes. As a matter of fact, there is a little piece of the spring in the socket anyway, if you want to get down to the exact construction.

Q. The tail end is hooked in?

A. That is right.

Q. In the patent drawing the tail end of the spring is hooked out through the hole?

A. That is right.

Q. This returning means that you have discussed is specified in the first three claims involved in suit as a

thermostatic element responsive to the heating of said coil. That phrase you understand to mean, do you not, that the thermostatic element receives its heat and its opening operations are determined by the temperature of the coil directly?

A. Just let me look at the claim. You say the first three claims in issue?

Mr. Wiles: Yes.

174 A. I do not think claim 1 would be limited to that extent, because it calls for a thermostatic element responsive to the heating of the coil.

Claim 2 says "and means responsive to the temperature of the heating unit." There I think it means it is absolutely responsive to the temperature of the heating unit.

Let us see what the third one is.

Q. The same temperature?

A. Yes, the second and third I understand to mean that the thing that is responsive is responsive to the heat generated by the heating coil.

Q. And you differentiate the first phrasing from that?

A. Yes, I do.

Q. What would one cover that the other would not, for instance?

Mr. Huxley: That is purely a matter of patent argument, if the Court please. I object to that.

Mr. Wiles: I want to know just what he means.

The Court: He has started and I think I will let him finish.

A. I think possibly the first situation you refer to, where the current is going through the wire, the heat effect of the current going through the bi-metal in-

175 fluenced or not, as I am not prepared to say until I know what kind of a heating element you have, by the heat of the element I think the first claim would cover a construction where the thing affected was affected by the current, whether directly or indirectly, rather than by the heat of the heating element.

Q. In other words, where the device was not of the type movable by heat at all, it is changed merely by a change in the flow of the current?

A. You put words in my mouth. I cannot answer.

Q. I am asking you. I don't just understand.

A. I say I cannot tell. I might say this, in my opinion that claim would cover a construction where the current, the heating effect of the current through the thermostat

was the thing that caused the thermostat to move, whether directly or indirectly, in proportion of the heating element.

That is claim 1 I was talking about.

Q. When you turn to 11 and 12, where it has automatic means for doing something, is that necessarily dependent on the temperature of the coil at all, or is it a timer or what is it?

Mr. Huxley: I repeat my objection as to what the particular term means in certain claims.

176 Mr. Wiles: Counsel asked him question after question in which he took the words quoted in the claims and said, "Where do you find that?" He read them right off the claims. I say I have a right to go into it. Of course, it is much more convenient to say, "I find them in a certain claim."

Mr. Huxley: I did not ask what they cover.

The Court: No.

Mr. Huxley: I did not ask about the scope or anything like that. I had certain elements or parts identified.

The Court: As I recall it there was nothing but the identification of the parts.

Mr. Wiles: The witness undertook in spots to say certain things were significant and others were not significant. It seems to me when we have language in the specification which he undertakes to interpret—To be sure he has not gone much to the language of the claims, but he has attempted to interpret the whole case, and I think we have a right to know whether automatic means for withdrawing the heater is the same thing or a different thing from means responsive to the temperature of the heating unit. I can put it in that form.

The Court: If you put it in that form I will allow it to be answered, but I still think you are asking the

177 witness to do the job that I will have to do some day.

Mr. Wiles: Of course, this is the oldest question in patent trials.

The Court: I will let him answer this question, but I think we have gone far enough into those matters. He may answer this question.

Mr. Wiles: I do not want to waste time on it, but a great deal depends on what the Court prefers. Judge Sanborn used to say, "While that is work I am going to have to do, still I want to know how the witness can differentiate and pick it out for me."

The Court: I said he might answer this question.

Mr. Huxley: What is the question?

Mr. Wiles: The question is, what is the difference, if any, between automatic means for withdrawing the heating unit or heating member and means responsive to the temperature of the heating unit?

A. Well, I think the expression in claim 11, as I understand it, is intended to do just that thing. It is supposed to embrace both the kind of an arrangement wherein the thermostat would be heated by the current actually going through, and also that is whether that is directly or indirectly affected by the temperature; and also the kind of a thermostat, as for instance, the thermostat in
178 the form of a coil spring taking the place of the spring 47 in Figure 15.

I think it is intended as a generic expression for those two kinds of arrangement.

The Court: Does it help me much to know what the witness thinks it is intended to indicate?

Mr. Wiles: It used to be considered so in the old days because, after all, the plaintiff's expert largely had to state the position of the plaintiff in the case, and in the old days, much of which I am glad to say is gone with open court trial, yet I cannot concede that most of our testimony prior to the 1913 rule was all wrong.

A great part of the testimony of those days on which the court relied greatly was the fact that the expert, a competent expert, was stating under oath the plaintiff's position, subject to cross-examination, and where he had to take the position of differentiating claim from claim and stand up to them on cross-examination. I think it raked out the plaintiff's case as no other system ever did.

I think it would be extremely helpful to the Court, it was thought to be so then, to show whether the plain-
179 tiff's position is one that will hang together or not.

Mr. Huxley: The matter of interpretation of claims is fundamental as determined by the prior art and all sorts of things that come in as to what scope is to be given.

The Court: I think so.

Mr. Wiles: I have covered about all of that I want to, anyway.

Q. In the Mead device, in order to have that operate you have to have a particular kind of a socket and a particular kind of a plug, and they have got to fit and inter-act and operate on each other; is that correct?

A. Indeed they do.

Q. When you spoke of the Cohen device a while ago in your direct testimony, you said that would take any old plug. That is correct, is it not, provided it is the right size?

A. That is right, the right size and construction and intended for that kind of thing.

Q. It would take a plug that would work just as well without the thermostatic device?

A. If the plug fits the socket and you have two of those things, you can take the socket of one and fit it
180 on the plug of the other.

Q. So far as the assembly plug lighter is concerned, that lighter would work just the same if there were no bi-metallic or thermostatic device in the base at all, would it not?

A. If you could get down through and make the contact.

Q. If the bi-metallic parts were out of action it would work just the same so far as the plug is concerned?

A. If you could make contact. You make contact through the bi-metal.

Q. Suppose the bi-metal is just manually bent so it won't do this bi-metallic work at all, would the device still work?

A. You have got to make contact down here. If you have no way of closing the circuit you cannot use it.

Q. In Figure 13 of Cohen, the bi-metal is generally expanded so it won't catch and perform its bi-metal work?

A. That is right.

Q. That is supposed to be done by heat?

A. That is right.

Q. Suppose we take the Cohen device and take a pair of pliers and bend it apart, when it is in the position of 13, we have destroyed the thermostatic operation?

181 A. That is right, and you do not have bi-metal in here, just plain metal.

Q. Or bend it so the bi-metal won't catch it, when the bi-metal won't be as big as Figure 13?

A. Yes.

Q. That would be still a perfectly operable manual old-fashioned lighter, wouldn't it?

A. Where you push the plug in?

Mr. Wiles: Yes.

A. But the trouble is you have got to take the bi-metal out and put in non-bi-metal. If you bend it with heat, it is going to walk away from that position.

Q. Supposing we make it non-bi-metal?

A. A non-automatic lighter.

Q. And the plug part of the lighter would behave precisely the same, would it not?

A. Except if it was a straight manually operated lighter, when you push it in you would have to hold it. When you took your hand off it would go out.

Q. So far as the lighter is concerned, it would operate exactly the same in a non-thermostatic socket as in a thermostatic socket?

A. That is correct, with all the limitations we brought in.

182 Q. Surely. That particular device as made would go into some of the sockets we had here in the suit we tried a few months ago?

A. They certainly could be made to do it, whether they would or not, I don't know. I think, as a matter of fact, that plug there is probably just copied out of one of those prior patents we talked about, if that is what you mean.

Q. If you took that and put it in the socket we had here before, and the socket was the same as in the other litigation where you testified, it would work just the way the plugs do in those devices?

A. That is right.

Q. So far as Cohen is concerned, then, as between the two parts, the plug lighter and the socket, Cohen's changes are entirely in the socket?

A. The mechanical changes are, yes, but the change in mode of operation goes to the whole device.

Q. I am getting at the changes.

A. The mechanical changes are entirely in the socket.

Q. The mechanical changes are entirely in the socket?

A. That is correct.

Mr. Wiles: By the way, I thought I would say at this time that Mr. Huxley and I have agreed that we may

183 use here, without a special offer, the charts, models and samples used in the other suit, because most of them are prior art here, in so far as they are competent here.

Mr. Huxley: That is correct.

Mr. Wiles: Q. When we come to defendant's device, if the defendant's bi-metal clasp or jaws, whatever we may call it, were spread so as to become inactive for thermostatic purposes, the plug would work, would it not, just like a manually operated lighter?

A. Yes, that is correct.

Q. And essentially its method of operation would be the method of operation illustrated in the samples of the other case of the Zecchini device, where you pushed down the top and closed the circuit inside?

Mr. Huxley: I do not think we should go into the prior art at this time. This is the prima facie case and that is not within the scope of the direct examination.

The Court: I think that is correct.

Mr. Wiles: We discussed that when we were here before.

Mr. Huxley: We will come to it in the orderly part of the case, after the Zecchini patent is put in.

Mr. Wiles: Will you put this witness back on?

184 Mr. Huxley: You can call him as your own witness.

Mr. Wiles: I don't want to call him as my own witness.

Mr. Huxley: You can have him as an adverse witness.

Mr. Wiles: That is just the point of the thing. I say counsel has no right in an equity cause to put a witness on the stand where we will know from his testimony right here before the Court in other litigation that there are matters that he does know and not subject him to examination on the real facts.

Mr. Huxley: That goes all over the same question we argued in the previous case.

Mr. Wiles: Yes.

Mr. Huxley: We have put in a prima facie case. The defendant will put in the prior art, I take it, and we will probably put Mr. Johnson back on the stand to discuss that prior art, and that is where this should come in.

Mr. Wiles: If Johnson goes on, that will be all right.

Mr. Huxley: I do not know what the Zecchini patent is, so far as this case is concerned. It is not in evidence.

The Court: I will see. I will allow him to be recalled for cross-examination.

Mr. Wiles: That is perfectly all right.

Whereupon a recess was taken until 2:00 o'clock p. m. of the same day.

185 Tuesday, March 21, 1939
2 o'clock P. M.

Court convened pursuant to recess.

Present:

Messrs. Huxley, Byrne, Wiles, Schroeder.

ARTHUR A. JOHNSON, resumed the stand for further examination:

Cross-Examination (Continued) by Mr. Wiles.

Q. Referring, Mr. Johnson, further to your general activities, did you examine defendant's lighter before this suit was instituted?

A. Yes, sir.

Q. And you became familiar with its construction, did you?

A. Yes, sir.

Q. And you compared it with the Mead patent?

A. Yes, sir.

Q. At that time you were engaged in prosecuting the Cohen patent in suit, were you not?

A. In the Patent office?

186 Q. Yes.

A. Yes, sir.

Q. Now, after you had examined the defendant's device you added certain descriptive matter to that part of the specification of Cohen which antedated the claims, did you not?

A. I canceled some part of the description and substituted another statement.

Q. Will you tell the Court what part of this patent you added after you studied the defendant's device?

A. Yes. I can do that very easily. May I have a copy of the file wrapper?

Mr. Schroeder: I can give you the file history, if you prefer. (Handing document to witness.)

The Witness: That's all right.

Mr. Wiles: Q. I want you to correlate it with the patent so we can state to the Court which lines of the patent came in.

A. Well, all right. During the prosecution of the appli-

cation the prior art came to light, and after the claims were allowed it seemed to me that the opening statement in the patent was not that contemplated by the statutes.

It did not give a brief description of the invention that
187 actually existed but it was broad enough to cover every construction such as Mead's. The Mead patent was old, but the statement of objects as I had it gave nobody any assistance in determining what the scope of the invention was.

Mr. Wiles: I move to strike all that.

Q. I just want you to tell the Court what parts that are in the patent were added by you at that time?

A. I am sorry.

Mr. Huxley: I think that all appears by the certified copy of the file wrapper, if that is going to be offered in evidence.

The Court: Well, I will allow this. It may be preliminary to something.

Mr. Wiles: I want to correlate it to the patent anyway. It could be correlated by a good deal of labor otherwise.

A. On page 1 of the patent from line 6, the first column, to line 18 of the second column contains the rewritten statement of invention. That was added by an amendment filed November 7, 1938 under Rule 78 after the notice of allowance.

Have you got that part marked? It is hard to find the place in the patent corresponding to the place in the application.

Q. I have a file history. That probably will be
188 easier.

A. Yes. That's fine. I can check it and make sure. Then, the part on page 3, column 1, lines 15 to 22 were inserted.

Q. That complete paragraph?

A. Yes, that complete paragraph. And a few other amendments were made. Do you want those referred to, a few little insertions?

Q. (Examining document in witness' hands.) I don't think so.

Mr. Huxley: Mr. Wiles, are you going to offer that certified file wrapper, because if you are not I would like to show the complete thing.

Mr. Wiles: Oh yes, I am going to offer it. I would just as well offer it now as Defendant's Exhibit L. We are going to offer all the other numbers for something else.

The Court: It may be admitted.

Mr. Wiles: That's the certified copy of the Cohen patent file wrapper and contents.

(The exhibit was so marked.)

Q. And at the same time you added all the claims here in suit of the Cohen patent except claim 3, did you not?

A. At the same time?

189 Q. Yes.

A. No.

Q. Well, those were also added, were they not, after you studied the defendant's device?

A. After the time I studied defendant's device they were added.

Q. Yes. And you had that device in mind when you drew those claims?

A. I would not say that. I had a great deal in mind. That was part of the sum total of the things I was considering.

Q. Now, among the parts that you added by this amendment to the specification was practically the entire statement of the purposes and objects of the invention, that's correct, is it not?

A. That's correct.

Q. And these same purposes and objects had not appeared in the specification before you saw the defendant's device, had they?

Mr. Huxley: I object to that, simply in the interest of saving time. This certified file wrapper shows the whole thing.

The Court: It will show all that.

Mr. Wiles: All right.

190 Q. Now, turning to the defendant's accused device, as illustrated in Plaintiff's Exhibit 17, as compared with old devices with which we are all familiar, the change there is entirely in the lighter and plug, is it not,—mechanical changes?

A. Yes.

Q. Defendant's lighter would operate in numerous old sockets that have no relation whatever to any automatic feature?

A. What do you mean by "old"? Where are you going to draw the line?

Q. The same kind of sockets that were used with the manual device?

A. Yes, with his manual device. With the defendant's manual device.

Q. Yes.

A. That's right.

Q. Or such a socket as that illustrated in the Zecchini patent if made of the right diameter?

A. No, it would not quite work that way.

Mr. Huxley: I move that be stricken, bringing in the prior art at this time when we have not got it before us.

Mr. Wiles: Well, it is not important.

Mr. Huxley: We all understand the point, your Honor.

191 The Court: All right.

Mr. Wiles: Q. And defendant's accused device would operate automatically if it were not put in any socket at all but were supplied with current in some other way?

A. Yes, if you fastened current supply terminals to the blue and yellow parts and found some way to push it together it would operate.

Q. There is no difficulty in finding some way to push it together, is that correct? You could take and push it together with your finger?

A. Yes, you can do it that way. I had in mind taking it by the end. I was afraid you would burn your fingers.

Q. You take it when it is cold and push it and you would get a light, if it has wires attached?

A. If it has wires attached to the blue and yellow parts there.

Q. And you saw the device that I illustrated in my argument yesterday where one was set on a stand?

A. No, I did not see it, Mr. Wiles. I was sitting back and did not see it.

Q. The device I had in mind is this little desk light. You would understand how that works without connecting it up?

A. Oh, yes, without connecting it up. But you see 192 this is what I had in mind, you would have to have something to hold it when you pressed it, and that's what you have got here. You have got a holder.

Q. Oh, yes, of course you have got a holder, but so far as the lighter portion of defendant's device is concerned it works just the same in this kind of a holder as it does in the regular socket of an automobile dash, does it not?

A. It does because you are holding the outside, and the spring has something to push against when the thermostat spring got hot. The coil spring has something to push against.

Q. Yes, that is, it is rigidly mounted by any of those rigid parts that you have marked in yellow and blue, any of those would do?

A. So far as I can see what you have done here is you have made it so it is removable.

Q. Oh, it is latched in. Removable has nothing to do with its operation. It would work just the same if it was soldered on, would it not?

A. Then you could not remove it.

Q. But as an automatic lighter it would work precisely the same, would it not?

A. Yes, if you did not solder the wrong part. You
193 mean to solder this?

Mr. Huxley: Just identify the part.

A. (Continued.) That outside yellow sleeve of Plaintiff's Exhibit 17, if you soldered that.

Mr. Wiles: Q. If you solder that to any kind of a socket it would still work just the same?

A. That's right.

Q. As it does when you have it removable in the socket?

A. Oh, no. I would not say that because when you have it removable in the socket the igniting unit when the heating element is ready for use moves out to a position and then you take it from that position. I think it is a different proposition when you make it removable.

Q. That's one of the things I want to get at. In defendant's device when the thing is heated up, the blue part as you mark it in Plaintiff's Exhibit 17 and the outside yellow sleeve all stand perfectly still, do they not?

A. When?

Q. All the time, from the time it is put in until the time it is manually removed.

A. Yes, if it is put in all the way to start with, yes.

Q. And the only thing that does move in defend-
194 ant's device is the handle at the top and the parts that are rigidly connected to it?

A. That's correct. And the spring, of course, which is between the two parts.

Q. Yes. And in the device on the standard that I have produced just the same parts move as move in the device accused, do they not?

A. That is correct.

Q. Just the handle and the parts attached to the handle?

A. That's correct.

Mr. Huxley: May I suggest that that device be marked for identification?

Mr. Wiles: Yes. Well, I will offer it. We will give it a number.

The Court: You might do it now.

Mr. Wiles: I offer it as Defendant's Exhibit O.
The Court: It may be admitted.
(The exhibit was so marked.)
Mr. Wiles: I think that's all.

195 *Redirect Examination by Mr. Huxley.*

Q. Mr. Johnson, when you submitted the claims to the patent office which appear in the patent as 14 to 27, what did you have before you and consider at that time?

A. Well, I had the whole prior art. The Mead patent, the English patent to Rupps. I had a good many developments that we had made, improvements of various kinds. One invention I made myself I had in mind, and several proposed competitive devices. I had not only those competitive devices but I had another one. We had a sample of this lighter that was being put on the market that was just part of the whole picture.

Q. We have introduced in evidence as a sample of plaintiff's commercial cigar lighters Plaintiff's Exhibit 3. Have you got an animated model that corresponds to that?

A. Yes, sir. This is an animated model made from a photostat drawing of the licensed device, the device of Casco Products Company, which is manufactured under the license of plaintiff, Automatic Devices Corporation.

Q. On this animated model the brass spring here represents what? What does that represent?

A. That represents the thermostat which is mounted
196 in the base of the cigar lighter.

Q. Bimetallic?

A. Bimetallic, yes. There are three of these things in the construction. We could only show one in a flat plane.

Mr. Huxley: I offer that in evidence as Plaintiff's Exhibit 3-A.

The Court: It may be admitted.
(The exhibit was so marked.)
Mr. Huxley: That is all.

Mr. Wiles: You have now opened the entire prior art to cross-examination.

Mr. Huxley: This is plaintiff's commercial device. It is just to show a little more how the device works. It is Plaintiff's Exhibit 3.

Mr. Wiles: That is not what I am talking about. I don't know how much I want to take advantage of that, Mr. Huxley, but you brought out on your redirect examination that

he had the entire prior art, including some other things, before him.

The Court: I think you had better let it go.

Mr. Wiles: I don't know that it makes much difference.

197 *Recross Examination by Mr. Wiles.*

Q. In addition to having all the prior art you said you had some other competitive device besides the defendant's which you had in mind when you drew these added claims?

A. Yes, sir.

Q. What was that device?

A. That was a device made by the Letterstone Manufacturing company,—I have forgotten the full name of the company, it is known as the Letterstone lighter.

Q. And you studied that and phrased claims to cover it, did you?

A. No, sir, I did not do that. I said that was part of the things I had in mind.

Q. Well, having it in mind you drew your claims comprehensively enough to include it, didn't you?

A. That along with everything else. Not one particular item.

Q. I did not say that. I say that having it in mind you did in fact endeavor to draw your claims comprehensively enough to cover it, did you not?

A. Yes.

Mr. Huxley: I don't think it makes any difference,
198 but I object to it as immaterial.

The Court: He has answered.

Mr. Wiles: Q. And you did the same with respect to defendant's lighter, did you?

A. Only as a part of the whole thing, not specially, if I can make that clear.

Mr. Wiles: I think you have made it clear enough.

JOSEPH H. COHEN, a witness called on behalf of plaintiff, having been first duly sworn, testified as follows:

Direct Examination by Mr. Huxley.

Q. Your name is Joseph H. Cohen and you reside at Bridgeport, Connecticut, and you are president of the Casco Products Corporation, which is the licensee under the patents here in suit, that is correct, is it not?

A. That's right, yes, sir.

Q. And the business of the Casco Products Corporation consists in large part of the manufacture of cigar lighters of the wireless type, the Casco Products Corporation having entered that particular field around 1928 and 1929 and continued in that business up until the pres-
199 ent time, is that correct?

A. Substantially.

Q. And over that period of years the Casco Products Corporation has manufactured wireless cigar lights of the non-automatic type, by that I mean those where you press in the igniter element and hold it in until the coil becomes heated, and has also manufactured and sold those of the automatic type where after the resistance element becomes heated the circuit is automatically opened, is that all true?

A. That's right.

Q. I am showing you a sample that has already been introduced in evidence as Plaintiff's Exhibit 7. Will you state what, if anything, you know about this particular device?

A. Well, I know considerable of it. Is there any particular thing you want to know?

Q. When did it first come to your attention?

A. To the best of my recollection I should say some time in 1929.

Q. 1929?

A. Yes.

Q. After you saw that device, tell us what happened in connection with your development?

200 A. Well, I was attracted to it because of what it had to offer in the way of a lighter. It had so many features primarily from the safety angle and the elimination of the manual requirements in the operation of the manual type of lighter. In better words, I saw the possibilities in this lighter wherein the hardship, as I would call it, connected with the use and operation of the manually operated lighter was eliminated, and a very accurate and definite light could be obtained on each operation, eliminating what we term a cold light, a lighting element that was partially heated. Tobacco will sear on a partially heated element and pull out the fragments of tobacco and sprinkle your lap with partially ignited particles. I have often had my attention called to the fact that women's hose were destroyed by fine little sparks. That, together with the necessity for holding the

manually operated lighter into contact and guessing as to when you should remove it.

A further hazard created because of the possible evil in driving with one hand and the driver's attention was distracted from the road. It had those many possibilities, so we became vitally interested in the possibilities of this automatic lighter.

Q. And what did you do in the way of develop-
201 ment work in connection with the automatic type of lighter?

A. Well, I realized full well that this device as is would not be acceptable to the car manufacturer because of its size and because of the limitation of space on the instrument board. There are so many other things to care for that the problem was one of reducing this to what we had been furnishing in a manually operated lighter. In other words, we had already created a space for the manually operated lighter on the instrument panel, and it was acceptable to the car manufacturer, and space was an important factor. As a matter of fact, we had reduced our manually operated lighter several times in order to comply with the car manufacturer's requirements, so we knew that same problem existed in the automatic lighter.

And so to put all of this in what space we had, looking at it quickly, you would say it was quite a task, and we found that it was. We spent a great deal of time in arriving at the construction we now have, and a great deal of experimental work was done. As a matter of fact a few years was spent primarily, because we had established a reputation with the car manufacturer for the lighter that we were supplying, and under these objectionable features of holding the lighter into con-
202 tact, and all I have explained. It was a perfect electrical and mechanical device. We enjoyed, and still do, an enviable reputation with the car manufacturer. We well knew that should we release this automatic lighter without definitely knowing that it was equally as perfect as the manually operated lighter,—we had a very substantial business, that it could easily be jeopardized, and would have eliminated for a long period of time the possibility of making this lighter for the car manufacturer.

Q. Did you in connection with your development work have occasion to make up a good many samples of different devices and so on?

A. I would say without thought of contradiction we made nearer to a hundred than any other figure I could mention. We made endless numbers of samples, always striving to the end that we would cull out the less advantageous features and ultimately get a commercially perfect device.

Q. And then in that development tell us, did you have any patent investigation made or anything like that in connection with the matter?

A. When I got far enough along with this automatic lighter of ours so it began taking on shape and
203 became very interesting I did with that as I do with all things, passed it on to Mr. Johnson, who immediately discovered that the Mead patent was the one stumbling block, and that was the one that had to be reckoned with before we could proceed.

Q. And then you acquired rights under the Mead patent, is that it?

A. And so from then on Mr. Johnson made the arrangement that ultimately resulted in our buying the Mead patent.

Q. It is a fact, is it not, that you actually put this automatic lighter on the market in the year 1936?

A. Yes. I would say the latter part of 1936.

Q. You have checked up, have you not, and obtained figures from the books of your company showing the sales, beginning with the year 1933 and up through 1938 of the manually operated, that is the non-automatic lighter, and also the automatic lighter, and you have checked those figures, have you not?

A. Yes, I have.

Q. Against those shown on this chart?

A. Yes, I have.

Q. And are those figures correct as shown on the chart?

204 A. They were given to me as being correct, and like all other matters our accountants passed them on to me, and I have to accept them as being correct. I did not personally compile these figures.

Mr. Huxley: We have a general stipulation that the books would not have to be produced. These figures are as a matter of fact taken from the books of the company and are quite accurate in showing the sales.

Q. To your personal knowledge, without regard to the last item of hundreds, but of your own personal knowledge how about the accuracy of those figures?

A. I would say, if I had never seen the figures, because of the knowledge that I have of the plant as a whole I could come very close to establishing about what you have there from my knowledge of the sales and activities in our business.

Q. For the years 1933 and 1934 it is a fact, is it not, that the figures were for the two years, but were not separated, so the same amount was arbitrarily given for each year, and that's why they are bracketed on the chart, is that correct?

A. I would say so.

205 Q. Now, I notice that for the year 1938 on the total business there is some falling off from 1937. Have you any explanation for that?

A. Well, car manufacture was curtailed considerable in 1938, and we depend almost entirely on the car manufacturer for our business on this item, and therefore that comparison would give you some idea of the shrinkage, the general shrinkage in the automative manufacture, automobile manufacture, and that would reflect pretty much the situation.

Q. And on this chart the blue indicates the sales of the non-automatic number of lighters sold, and the red indicates the sale of automatic lighters sold?

A. It indicates very clearly where the non-automatic lighter began to yield and fall off in sales and be replaced by the automatic, which in the 1936 column indicates the beginning of the activity in the automatic lighter. And then the growth of the red portion of the column indicates the rapidity with which the automatic lighter replaced the manually operated lighter, and ultimately almost eliminating it. As a matter of fact we have but one account which partially uses the non-automatic lighter on one of the lesser costly cars.

Mr. Huxley: The chart is offered in evidence as
206 Plaintiff's Exhibit 19.

The Court: It may be admitted.

(The exhibit was so marked.)

Mr. Huxley: Q. Now, when you decided to go into the automatic lighter, will you tell us what you did in connection with the equipment of your factory and so on?

A. Since we realized right from the very beginning because of the way the lighter was accepted, it was very definite in our mind that it was a very good automatic lighter, and because of the great care and accuracy acquired in making automatic lighters, the accuracy in the

timing of the operation of the thermostat in connection with all its component parts required new and different equipment, and I say without fear of contradiction that we have expended I would say, upwards of two hundred thousand dollars, and nearer to three, for equipment, from which this automatic lighter of ours is produced, in order that we can produce it at a price reasonably in line with that of the non-automatic, and as I earlier stated knowing that it was definitely all going away from the manually operated lighter, that we were sure of ourselves on the point that we knew it was permanent,

207 and therefore we bought real fine production equipment. For instance, we just had a piece delivered to us not over two weeks ago that cost something like nineteen thousand dollars, to further reduce the cost of manufacture. Sure, that could be produced in smaller quantities, with a tool that probably would not cost more than five hundred dollars, but in order to produce this in mass production, and accurately, we bought what is commonly known as the ten plunger machine made by the Farrell factory, and it has attached to it roll feeds that roll feed automatically the component parts, or the parts, and produce very accurate parts. In other words, there is virtually ten presses united into one, and if that were such as commonly done that would be done in ten operations, whereas this machine carries it along mechanically from one piece virtually to another, and those are the type of tools that we have purchased for the manufacture of the automatic lighter, and our plant reflects that all the way through.

Q. Will you give a comparison of the selling price by your company of the non-automatic as compared with the automatic lighter?

A. The differential between the two?

Q. Yes, the differential. That is, what does the non-automatic sell for and the automatic sell for?

208 A. Well, it varies with certain modifications handed down to us by the car manufacturer, primarily because of the change in the knob. One may have a very intricate one, and a large one, and others a very simple one, and that range I would say varies about five or six cents, as to the modification. The total difference, or I might say the average difference would be a range of between ten and fifteen cents.

Q. Which sells for the higher price?

A. The automatic by an increase of ten or fifteen cents,

depending upon the specification, not altering the lighter but because of the complications sometimes created by the application of the lighter to an instrument panel, such as in the case of Cadillac one year where a large casting had to be used, and a knob also of a very different shape and size.

Q. When you have given these rough estimates, regarding prices, these refer to the lighters as you have supplied them as factory equipment for cars, is that correct?

A. That's right.

Q. Is that the bulk of your business?

A. Oh, yes. In the case of the automatic lighter, in the absence of figures, I would say that our business is 98
209 per cent with the car manufacturers, and there are few sold for any other reason or through any other channel.

Q. Have you encountered any competition in the sale of the automatic lighter?

A. Yes, we have.

Q. When?

A. To the best of my recollection some time during the fiscal year of 1938. When I say the "fiscal year of 1938," the car manufacturer usually plans his product and makes his showing very late in the fall, November, and then carries on until November of the following year, so it could be 1938 for 1939 products.

Q. What was the principal competition, by whom?

A. Sinko Tool and Manufacturing Company, I believe is the way they style it.

Q. What was the effect of that competition on the price of your own product?

A. A much lower price. A substantially lower price has been offered to all the users, all the car manufacturers. The Oldsmobile Company for one has decided to buy the Sinko automatic lighter after promising us to let us supply them.

Q. Well, in so far as that competition is concerned
210 what has been the effect on your price, of your own?

A. We have very recently been forced to make a reduction which has been announced through our Mr. Sinclair very recently.

Q. How much was that?

A. Our recent reduction was two and one-half cents per unit. This was occasioned by the fact that a much lower figure was named.

Q. You have come in contact with the automobile manufacturers, have you, in the course of your business?

A. I come out here and join Mr. Sinclair at intervals, see the trade with him and learn what I can about the success they are having, and if changes are required for one reason or another. I have always done that, and I continue that practice.

Q. What contact did you have in general with the automobile manufacturers when you put this automatic lighter on the market?

A. I remember very clearly the first instance. I came out here on one of my periodical visits with Mr. Sinclair for the purpose of going around and finding out what I could, and this happened at the Packard Motor Car Company plant. After visiting with Mr. Hittle, the purchasing agent in our division, Mr. Hittle was seeing us to the
211 sidewalk, and we were leisurely going through the lounge, when one of the engineers, a man by the name of Belts, I believe, stopped us, and I met him again, and he said—

Mr. Wiles: I object, if the Court please.

Mr. Huxley: Q. State the direct contact.

Mr. Wiles: I am objecting on the ground of hearsay. He started in to make statements by a Packard Company engineer. He has not any right to do that.

Mr. Huxley: You can say what was done.

The Court: If they took orders from him he can tell.

Mr. Wiles: Oh yes, but the meeting with this Packard engineer, he started to say he said so and so, and I object to that.

The Court: That might be the reason they were given if they discontinued the use of the Casco lighter. Might not the reasons they gave for doing so be given in evidence, and that would have to be by way of conversation?

Mr. Huxley: It seems to me he can state what was said.

The Court: Yes, I think so.

A. Well, Mr. Belts said "When are you going to sell this automatic lighter," and that came to us rather
212 as a surprise because we had not received any order for them up to that time, and I was compromised because Mr. Hittle was present, the purchasing agent. So he said "How long do you want?" He said "I have written it into the specification for the new car," and we were confronted with the proposition of going back hurriedly and producing this lighter for this model.

Mr. Huxley: Q. Did that result in orders?

A. That resulted in a definite order which followed immediately after this conversation. Mr. Belts was very much concerned about our delivering this new automatic lighter for his new product which was coming right along and forced us to start manufacturing much sooner than we had anticipated.

213 Q. Did you have similar contacts with other motor car companies?

A. We had a contact with the Chevrolet Motor Car Company. Then we were afraid of showing it to too many manufacturers at the same time, because we could not make ready for this complete revolution. We were producing so many of these non-automatic lighters we feared if we were showered with too much business in that particular period it would be physically impossible to make this gigantic change, so we were cautious about showing it any further, but just as soon as we were in production we made it known to the car manufacturers and it was readily approved and accepted by all of them, all of those we had been furnishing the manually operated lighter with.

The only exception, if I might state, the Ford Motor Car Company chose to keep the manual, for their low-priced production and bought the automatic for the Lincoln Zephyr and the Lincoln.

Q As far as that is concerned, as far as you know, were substantially all of the car manufacturers adopting this automatic lighter?

A. Oh, yes, almost on sight, because of the experience they had with it and our equipment to demonstrate the 214 value of it. We had a machine that would run day and night to show the lasting qualities of the device. The thing would run all day and if the cigar lighter failed it would register and indicate the number of lights we; we were able to run that to 26,000. That demonstrated what it would have taken much longer to do used on the car manually. In a very short time we were able to satisfy the car manufacturers that it would last the life of the car, and more too.

Mr. Huxley: That is all.

Cross-Examination by Mr. Wiles.

Q. At the time when you produced this automatic lighter your company had most of the business of the manufacturers of the country, did you not, on the manual lighter?

A. Well, we had a little more than half, I would say.
Q. Of the manufacturers' business?
A. That is right.
Q. Who had the rest?
A. Cuneo Engineering Company were licensed by us.
Q. Were you both selling the same people?
A. Well, yes; sure. We split the business with the
215 Ford Motor Car Company and we may have gotten at one time a little more and they would get a little more some other time, but substantially we divided that business.
Q. There were some manufacturers, were there not, whom the defendants sold all that time, or for some years past?
A. In most recent years the defendant sold one, to my knowledge, one car manufacturer, primarily Oldsmobile.
Q. You had not done any business with the Oldsmobile for some years, had you?
A. We always sold the Oldsmobile, one of the two of us, heretofore up to the time the Sinko Company came with a lower price and took the business and was able to keep it because of our inability to meet that price.
Q. Prior to the time that the automatic lighter came into the field, there was a time when you did not sell Oldsmobile at all, was there not?
A. I just said we lost the business through the Sinko Company for the reason I stated.
Q. Some time prior to the automatic coming out?
A. Oh, yes.
Mr. Huxley: I would like to offer in evidence Plain-
tiff's Exhibit 20, this stand which has on it one of the
216 Plaintiff's commercial lighters on the right hand side, and a manual lighter in the center, and one of the defendant's accused lighters on the left hand side. I do not think there is any dispute as to it, but we may want to refer to it later. That is Plaintiff's Exhibit 20.
The Court: It may be admitted.
(The exhibit was so marked.)
Mr. Wiles: Q. You said something in your direct about the Oldsmobile business. The actual fact is that when you brought out the automatic lighter you tried to get the Oldsmobile business with it, didn't you?
A. Yes, I did.
Q. And you didn't get it?
A. That is right.
Q. But so far as the defendant taking any business that

you had had immediately before, that was not true in the Oldsmobile case, was it?

A. This all happened in a very short space of time. It was only a couple of years before that when they had taken the manual lighter from us. They happened to take it from the Cuno Engineering Company, who was one of our licensees.

Q. So far as Oldsmobile was concerned, they did
217 not take any business you had had for the preceding two years?

A. I would say no, because on my trip to Lansing with Mr. Sinclair, Mr. Lowden told me very definitely that he would take our lighter in the fall of that year for the new model.

Q. In other words, you thought you were going to get the business?

A. I will tell you very definitely that they were going to take our lighter.

Q. Will you just answer the questions so far as the Oldsmobile business. Did the defendant take any business at all that you had had in the preceding two years?

A. Well, if I could use his promise as having had the business.

Mr. Huxley: I object to this as immaterial. I don't see that it is getting us anywhere.

The Court: I do not know the purpose of it.

Mr. Wiles: I do not know why counsel went into the proposition, that this defendant had come in and taken their business.

The Court: I think counsel was simply trying to prove their success.

218 Mr. Huxley: Their success and the kind of competition they had.

Mr. Wiles: Q. Has the defendant taken any other business that you had before?

A. Yes.

Q. What?

A. The Hudson Motor Car business.

Q. Were you doing business with them before that?

A. Right up to the minute they took it from us.

Q. Was that with the automatic lighter?

Mr. Huxley: Objected to as immaterial.

The Court: I do not see the materiality of it.

Mr. Wiles: I think they made it material with the direct testimony.

The Court: Well I don't think we need to go into it any farther. Of course the two were in competition, there is no doubt about that.

Mr. Wiles: To a large extent, at least, this success that you testified about and illustrated on the chart simply means, in fact, all of it, so far as the chart is concerned, is simply a shifting within your own company from one type of lighter to the other; isn't that right?

A. That is right.

219 Q. Most any new and attractive model that you brought out would have been acceptable to the same people, would it not?

A. Well, if it was better, I presume, than the previous lighter, many of them would take it for the same reason we would make it.

Q. If it was just as good and you changed, it would be accepted?

A. No, you cannot do that just like that. There is thousands of dollars and equipment involved and special tools. We cannot change things because we do not like the appearance of the thing.

Q. I did not ask whether you could. I say it would have been accepted if you had changed your construction for any reason and it was just as good, your customers would have accepted the change, wouldn't they?

A. That is so hypothetical.

The Court: I don't see how the witness can answer the question.

Mr. Huxley: No.

The Court: That would be pure speculation as to whether they would take it or not.

Mr. Wiles: Q. Have you changed your models from time to time, the manual models?

220 A. Substantially no. We have always made improvements. For instance, a better quality of insulation would be available and naturally we would change. We would change only to improve substantially what we had, to create greater lasting qualities, not because of any eye appeal, because that is changed annually, every year, in the form of a knob which is designed by the car manufacturer. That is one thing we change annually, not because we choose to do it, but because they change the character of the thing this lighter fits into, with its complete ensemble, which is the instrument panel. You are probably familiar with that.

Q. When you made these changes you have spoken of,

these improvements, they were accepted by all your customers, were they not?

A. Every change that we make, as a matter of fact, is first submitted to the car manufacturers' engineers for their approval. Substantially I would say our recommendations as submitted are largely adopted and acceptable because we are constantly doing research work to ascertain the values of these improvements, and they have a great deal of respect for what we submit.

Mr. Wiles: We would get along a great deal faster if you would answer my questions.

221 The Witness: I don't think I am delaying you.

The Court: Answer the questions.

Mr. Wiles: You told us just now a few answers back, that you did make numerous minor improvement changes in your lighter. Were those accepted by the manufacturers, or were they not?

A. I don't even remember making that statement. I agreed with you that we made changes and improvements, but I had nothing to do with "numerous" or otherwise.

Q. You mentioned, for example, that you changed to this bracket installation. Do you remember saying that?

A. That is right.

Q. That change was accepted by the manufacturers when you made it, was it not?

A. As well as other changes from time to time, but they were not great. The lighter, as we know it, has been commercially perfect, in our opinion. When I say commercially perfect, there is a little bracket there that we allow for and we do not expect you to accept that as perfect in that sense of the word, that they do not go wrong, but commercially perfect is the expression we use when the product is up to a very high standard.

Q. You told us on your direct something about the improvements in the machinery and so forth that you

222 used in making these automatic lighters. Will you tell us about the bi-metal part?

A. I will be glad to.

Q. How is that bi-metal part made?

A. I am very proud to be allowed to tell you that, because it is considered by the producers of the bi-metal to be one of the most ingenious devices they have ever seen. It comprises an 8-plunger machine, from the Farrell Foundry Company, tooled to produce this device in a manner that has heretofore been unknown, as they would have us believe, since we use our thermostat as a

thermostat and as a mechanical holding device, and the combination of the two they tell us has never been done before.

The accuracy required in that spider or thermostat, as you can appreciate, is very necessary and to produce it we produce it with a series of carboloid tools. Carboloid is an alloy that has very little known wear and is very lasting. Because the bi-metal is so abrasive it will destroy the average stuff tools are made from, ordinary tool steel, in a couple of days, and therefore will create an inaccuracy in the various contours of these spiders.

223 The angles and every part of that thermostat are extremely accurate, so much so that right alongside of the machine which produce it we have an exaggeration machine, in other words, a magnifying projector, like a moving picture projector, and we have to project the thermostat enlarged ten times in order to make sure that all of the angles and contours are accurate. In other words, an enlargement of this thermostat is drawn out very accurately on paper. This is placed in this projector and by placing the thermostat directly in front of this outline it exaggerates the thermostat ten times and it must fit the contour laid out on this paper exactly before it is acceptable, in order to create accuracy.

The Court: I do not think Mr. Wiles asked for all this. It is quite interesting, but I do not know about the improvement in machinery for producing these things has much to do with this case.

Mr. Wiles: I am glad to have it all in.

Mr. Huxley: It doesn't seem to me it is pertinent to the issues.

The Court: It doesn't to me.

Mr. Wiles: In such detail I can see it is not. The broad question I was asking is as to the method of manufacture.

224 The Witness: I do not how to describe the manufacture other than that.

The Court: I am not interested in the manufacture. It is the product I am interested in, is it not?

Mr. Wiles: I would rather not answer that question with the witness here.

The Court: Well, all right. I won't ask for an answer to the question then. I will just remark that that is my reasoning.

Mr. Wiles: I think there is a real reason, Judge. I

would not do it just to waste time. I am perfectly willing to tell you if you will exclude the witness.

The Court: No. Let us proceed.

Mr. Wiles: Q. Whether you use carboloid tools or what not, tell me, broadly speaking, how is that spider made, is it pressed or swedged or what is done with it?

A. I just told you that it is made in an 8-plunger machine, formed slowly and shaped up to the exact contour, and at the end of the stroke of the last plunger a finished thermostat is deflected into a tote pan, and then gauged for its accuracy and then put into lighters. I don't know how to explain it without going into all of this.

Q. The operation is a pressing operation?

225 A. A very elaborate one, at an expense of probably ten times over what it would cost to do it as it would be done, in so far as equipment is concerned. In other words, you would have to have ten operations.

Q. It is a pressing operation is it, or isn't it?

A. Decidedly so.

Q. All right. And when you get done you have this little spider. Has it three arms on it?

A. We have a complete perfect thermostat.

Q. Does this little spider-shaped thermostat have three arms; is that right?

A. Yes, it has three arms, if you want to call it a spider, you might call it an octopus.

Q. You called it a spider, didn't you?

A. It doesn't make much difference what you call it.

Q. It happens I am not very well acquainted with it. I have glanced at it a few times. At the close of its manufacture, did you say it is gauged?

A. Gauged in a much more elaborate way than I fear you will appreciate.

Q. It is gauged and checked by itself?

A. No, not by itself, manually. It is gauged and checked several times before it finally reaches the point where it leaves the plant.

226 Q. After that checking is it put in the socket?

A. Yes.

Q. And fastened there?

A. Yes.

Q. Is it gauged after it is put in?

A. Yes, that is right.

Q. Now during any of these times is it operated in connection with the heater?

A. Yes.

Q. During the gauging operations?

A. Yes, it is gauged mechanically against friction, tension and ultimately it is put into electrical rotating machines and it is put into contact mechanically. When it reaches a certain position, if the lighter is accurate as to timing it is kicked out in one position and if it is inaccurate for any reason it is thrown out in another position. There are three positions, slow, fast and O. K., and if it is O. K. it is passed on and even then subjected to two additional operations, and it must be O. K. three times before it is permitted to leave the plant.

Q. I do not understand what you mean by this timing. Will you tell me what you mean by that?

A. When the heating element is brought to the
227 proper incandescence the opening of the thermostat takes place and the lighter is then clicked into a neutral position, at which time it is ready for use.

Q. Is that done with these little thermostat spiders before they are assembled or afterwards?

A. It is done in several stages. Any number of our manufacturers have had their representatives there and you could get this information from them if you doubt my veracity.

Each lighter is subjected to several tests and in the last final stages, after it has met with approval mechanically and electrically, because it is free from short circuits or any drainage which may be a partial short or poor insulation it is then subjected to three tests. It may get ten tests, but it must have three consecutive tests, at which time the performance of the lighter has not changed.

So when you ask me how many times it is tested, if we have a good lighter we could produce that in six or seven tries, but sometimes with an awkward batch of metal or a batch of metal that is not as accurate for some reason, it means changes must be made and then a setting must be arrived at, and in the final analysis it must have three uninterrupted tests that do not fail, and then the
228 lighter is acceptable. That is standard practice in our plant.

Q. This last test that you talk about, is that after the complete assembly of the lighter?

A. It is a completely assembled lighter using similar wells, since our lighters are all interchangeable it does not make any difference. We ship our lighters separately. We ship the heater, the heating element of the plug sepa-

rately and ship the wells separately, because the wells are put in cars in one department and the heating element holder is applied at the very last minute to prevent theft, so the lighters have to be interchangeable, and that explains why they must be made very accurate in order to make the lighter fit in any element well very easily. There is so much theft in these car factories that they put the heater element in the very final thing. When the car leaves the chain the lighter element is put in with certain other precious things that can be stolen. The lighter is put in the tool box so when the owner gets the tool box he finds his lighter in a locked up compartment.

Q. So that these tests that you have spoken of are really tests of the socket complete with the thermo-
229 stat in it to make sure that it is standard?

A. Tests of the sockets, and tests of the heating element holder. One is equally as important as the other from the standpoint of being mechanically perfect or commercially perfect.

Q. The socket is not tested with the same lighter or plug that it is going to be used with?

A. Since they are all alike and must be for the reasons explained, that accounts for these many tests, because of the interchangeability. You can take any of our lighters and scramble them and mix them up and one will work with another equally as well.

Q. I did not ask whether it mattered. I asked if you did. In point of fact, you do not make a test of a socket with any particular lighter?

A. No particular one, use them as they come along. As to whether they find themselves back in the same socket, it does not matter.

Q. When you make these tests, how close do you duplicate the timing from lighter to lighter?

A. We have a tolerance there, to be exact, from eight to ten seconds is our tolerance, a tolerance of two seconds in a lighter, that is the greatest variation we allow; a minimum of eight seconds, which will give you a very
230 definite cherry red light, and ten seconds, which may be just a little brighter, the reason for it is there is so much variation in the wire. The resistance wire varies to the point where it is utterly impossible to work any closer than that, but that is very acceptable to the car manufacturer.

As a matter of fact, one time we held that closer and

found it was not entirely necessary. It created a further hardship for us in manufacture.

Mr. Wiles: That is all.

Mr. Huxley: That is all.

The Court: We will take a little recess.

(A short recess was taken.)

Mr. Huxley: Plaintiff rests.

Plaintiff rests.

231 Thereupon the defendant, to maintain the issues on its behalf, introduced the following evidence, to wit:

Mr. Schroeder: Your Honor, we would like to offer in evidence this volume of patents as Defendant's Exhibit A. These are the patents that are set up in the answer. There is an additional one not set up in the answer, merely to show the state of the art, that is Burnett No. 972,811. I presume counsel is willing to have that go in.

Mr. Huxley: No objection.

The Court: It may go in.

(The exhibit was so marked.)

Mr. Schroeder: We will call Mr. Sinko as our first witness.

Mr. Huxley: Before we start in on the examination of the witness, now that the prior art patents have been offered, I think there are about forty-nine or fifty, about twenty-nine against the Mead patent and fifteen against Cohen and about nineteen against the other patent,

232 I wonder if we could have a description or a specification from defendant as to the patents on which they principally rely, two or three against each patent.

Mr. Wiles: I had not thought of principally relying on any of them because we do not intend to put an expert on, I mean a patent expert, at all, and it is generally, I think, important and certainly wise in these cases to show universal adoption of this general principle widely through the arts. Much of this material is for that purpose.

Then much of this material claimed or asserted is just purely aggregative, picking out one little thing here and one here and another another place.

I do not think we are putting in any useless prior art at all.

Mr. Huxley: I merely asked the question whether counsel is prepared or not prepared.

Mr. Wiles: I certainly am not prepared now. I am not going to limit it to two or three on any one patent.

That would be absurd. Most of them, I think, have a purpose here I am not sure I shall necessarily argue every one of them, but I do want the Court, before we are through, to have a sort of composite picture of all these patents teach about the art.

233 The Court: Before briefs are filed I suppose you will have ascertained what you will argue and can advise counsel.

Mr. Wiles: The briefs will advise him surely.

The Court: If he files his brief first, that will not help.

Mr. Huxley: I would not have much advice then.

Mr. Wiles: We will do our best, of course.

Mr. Huxley: I think before we start in on our rebuttal, if they could take two or three patents, not to restrict, them to only those, but on every patent state principally two or three patents in the prior art you rely on.

Mr. Wiles: That is not true. For example on Mead. Counsel takes the broad position it was a great pioneer thing to put this thing into a cigar lighter.

We have one patent that shows a timer, assuming they go back of Copeland. They say they can antedate him.

Mr. Huxley: It is a patent that is not very material and we will eliminate it if we can.

Mr. Wiles: They will say that Mead was the first to put a thermostat on a cigar lighter at all. To meet that I want to show that thermostats are just as common
234 as dirt in every industry, and the man who put one on a cigar lighter first is not entitled to anything at all. I want to show the common sense of the thing.

Mr. Huxley: I did not mean to argue. I meant only to ask counsel a question.

Mr. Wiles: I won't do it now certainly.

The Court: All right.

Mr. Huxley: As I understand it, there is no definite anticipation claimed or alleged. It is a question whether there is invention over all this prior art.

Mr. Wiles: It depends on how broad some of these claims are stretched. I would guess that maybe that electrical timer here would preclude some of the constructions that seem to me to have been suggested in the course of this trial.

The mere fact that any control at all has been put on a cigar lighter, when it comes to these details that they have bodily appropriated from elsewhere,— For instance, Cohen said here about the heater that it was absolutely new to use a thermostat as a clasping device.

We have, I don't know how many, certainly one excellent one, which is almost exactly like these things in the art. We want to meet the points they make.

235 The Court: All right.

Mr. Huxley: Counsel is not prepared to state now.

Mr. Wiles: Certainly not. I said that a long time ago.

JOHN SINKO, called as a witness on behalf of the defendant, having been first duly sworn, testified as follows:

Direct Examination by Mr. Schroeder.

Q. Please state your name, residence and occupation.

A. John Sinko, 1135 Oak Park Avenue, Oak Park, Illinois.

Q. What is your occupation?

A. President of the Sinko Tool and Manufacturing Company.

Q. When was your company organized and what is the nature of its business?

A. We organized in 1919, twenty years ago. We are manufacturing a variety of products. Between them we have a department which is occupied in manufacturing registers, some office receipt registers, and we make

236 special tools and dies for other people and for ourselves. We have a department where we produce plastic materials in the form of radio knobs and dials and what not.

We have a department where we manufacture cigar lighters and gear shift knobs for automobiles and some steering wheel controls.

We may have several other little things but they probably would not amount to much. That is our main business.

Q. I hand you a little device that we have marked for identification as Defendant's Exhibit B, and will ask you if you can identify this and tell us whether that is an article of your company's manufacture?

A. Yes, this is a little cut-out device for electric current. It was used like in an off and on light in a standard socket, put it in between a bulb and socket. When the current cuts off, it has a thermostat in it and when the current cuts off the light goes out, and then after a little while, after this makes a contact, then the light goes on again. So that is what we would really call a flasher, a flasher for electric lights.

Q. I hand you a ledger sheet which we have marked
237 for identification as Defendant's Exhibit C, and ask you if you can identify this sheet and the approximate time and number of those devices that you have manufactured.

A. This was made by us in the latter part of 1926, December, and in the beginning of 1927, we were working on this up to April, 1927, and probably made around 57,000 of these flashers for the very same purpose. It has a thermostat in it.

Q. You have stated that this little button you have in your hand has a thermostat in it?

A. Yes.

Q. What is the function of that thermostat? Is it operated to time the device or what does it do?

A. It operates the device intermittently. There are little coils that heat up the thermostat, around the thermostatic metal body, and when the contact is on that wire heats up and that heats up the thermostat, causing a cut-out. That causes the on and off play in the cut-off.

Q. Is that a bi-metal thermostat?

A. That is a bi-metal thermostat; yes.

Q. By bi-metal you mean two metals are brought together in close relationship, one of them expands faster
238 than the other upon heating and that causes the bending action?

A. Correct.

Mr. Schroeder: I would like to offer this sheet and this button in evidence as DEFENDANT'S EXHIBITS B and C.

The Court: They may be received.

(The exhibits were so marked.)

Mr. Schroeder: Q. I hand you what purports to be a flatiron plug, marked for identification as Defendant's Exhibit D, and ask you to tell us what you can of this article, as to whether it was made by your company and the date.

239 A. This is an flat iron plug. It could be used for a flat-iron and it could be used for these electric coffee—what would you call it—percolators, or on anything where you need a cut-out, an automatic cut-out. This was originally made by the Electric Safety Devices Company which was organized some time back toward the end of 1925, and they had been working on this thing and they produced, oh, about five or six thousand themselves, and later on they turned the job over to us in the beginning of 1927. That was around January, I believe; toward the end of January.

Q. I hand you another ledger sheet marked for identification as Defendant's Exhibit E and ask you if this will refresh your recollection as to the dates.

A. That is correct. That is Feruary 9, 1927.

Q. Now, please explain to the Court the operation of this device. I understand it has a thermostat in it. Explain how the current is turned on, how it is turned off, and where the heat comes from.

A. Well, this is a safety plug, as they call it. The purpose was to cut off heat from the iron so as to prevent overheating. When it reached a limited heat this would cut the current from the wire (indicating), and
240 then naturally the heating was stopped. So it has a thermostat in it and it acts through the two plugs that we have in the iron. When this is connected with the two plugs in the iron, the two plugs conduct the heat into the body of the plug, and due to that, when the thermostat reaches a certain heat it trips the little spring that is in here (indicating).

The Court: It what?

The Witness: Trips a little spring with a little pawl and that cuts off the current. It is really a switch mechanism.

Mr. Schroeder: Q. In other words, when there is sufficient heat conducted back through those contact pins that fit into this plug member, when sufficient heat comes back to buckle that thermostat, it automatically trips a little spring and causes that button to pop out?

A. That is correct. This is a push button. When you want to make an engagement all you do is push this little button and it stays in.

Mr. Wiles: That is the red button you are pointing at.

The Witness: The red button, yes. When it reaches a certain amount of heat, when the thermostat trips this little lever the button comes out and it indicates that the heat is shut off.

241 Mr. Schroeder: Q. Can this device be used as a manual switch in case you want to turn off the current?

A. Yes, there is another plug on the back side that would turn off the power. In case you would want to turn off the current before it really reached a certain amount of heat, this would do it (indicating).

Q. That is the black plug you referred to on the opposite side?

A. The black plug which is the switch which cuts it down whenever you may require.

Q. Can you state approximately how many of those devices were made by your company after you took over the work of this concern?

A. I don't remember exactly, but we must have made altogether around five thousand, probably. It may not have been. Between four and five thousand. We had originally, I know, parts for ten thousand.

Q. After this plug has been in use for a time and the iron becomes hot causing the thermostat to buckle and cause that red button to push out, can you cause the circuit to be closed again by pressing down and holding the red button in?

A. You could, but it wouldn't stay in until it cooled off enough.

242 Q. The question is not whether it would stay down there automatically, but if you held it in there manually would that close the circuit again to the flatiron? If you care to you can take the plug apart and examine it.

A. I don't exactly remember. I think it should.

Q. Well—

A. It should. If you hold them together in this fashion here (indicating), it should.

Mr. Wiles: I think we will want you to show the Court how it looks on the inside anyway.

Mr. Schroeder: Yes.

Mr. Huxley: Is there any patent that describes that? It might save time.

Mr. Schroeder: I am just coming to that.

(Witness takes plug apart.)

The Witness: Your Honor, this is the working part (indicating). This little switch is pushed on, on this member right here (indicating). This red button is pushing on this small part which is passing down a connection (indicating). Therefore, if you push that button down it will make a connection. It will stay closed even if the thermostat would not hold it in a closed position until it is cooled down enough. The purpose of that

243 thermostat is to lift this part up here, which is automatically carried away a far enough distance to cause that thing to disconnect, as long as it is in an upward position here (indicating).

The Court: Now I think somebody better explain this for the reporter so that we will know what is being talked about.

Mr. Schroeder: Well, this construction here—

The Court: We are getting it into the record. Does the patent sufficiently show it to get it into the record. The witness was showing me how it worked and he referred to "this thing" and "that thing," but it would not be in the record.

Mr. Wiles: Name the parts with the patent identifications.

Mr. Schroeder: Q. All right. Mr. Sinko, referring to Defendant's Exhibit A, I call your attention to a patent on page 27, Arnesen Patent 1,689,007, and ask you if this patent accurately describes the construction of Defendant's Exhibit D that you have just explained to the Court?

A. Yes. This patent is describing just exactly the model that was made or this merchandise that was made.

Q. This patent was issued on October 23, 1928, as a result of an application filed March 24, 1926, to Char-
244 lotte Arnesen. Is that the party that you made these plugs for?

A. Correct.

Q. Now the patent refers to the thermostatic member as Number 43. Will you point that out to the Court?

A. This is the thermostatic membe this long bar fastened to one end of the terminal (in ing).

Q. Now, the patent describes t e itch as being closed by depressing the plunger 31 against the roller 30. Will you point out that operation?

A. Here is the plunger (indicating). That is 31, is it?

Q. Yes.

The Court: The black plunger?

The Witness: And the black roller which is connected to that little pawl. You press this down until this member that is in here jumps into the notch on the power member (indicating).

Mr. Schroeder: Q. To disengage the member you press on the black button 41?

A. Correct. That is connected with the thermostat. We just press, just like if it would be heated, we press on the button and the thermostat lever moves up causing the disconnection from the engagement.

245 Q. That is, pressure on the black button applies force to the lower side of the thermostat and causes the switch to become unlatched?

A. Correct.

Q. The heat that operates the thermostat 43, as I un-

derstand from your testimony, is conducted up from the heating element such as the flatiron 8 shown in Figure 1. That is conducted up through the contact members 15 and 15', is that correct?

A. That is correct.

Mr. Schroeder: I would like to offer the plug as Defendant's Exhibit D and the ledger sheet as Defendant's Exhibit E.

The Court: They will be admitted.

(The plug and ledger sheet were so marked.)

Mr. Schroeder: Q. You stated that your company manufactures cigar lighters. When did your company first begin to manufacture cigar lighters?

A. 1924.

Q. Did you continue to manufacture cigar lighters of various types down through to the present time?

A. That is correct.

Q. I hand you a little device marked for identification as Defendant's Exhibit F—

246 The Court: Perhaps the witness better be given time to get this together again.

Mr. Byrne: Is there any more screwing to be done?

Mr. Schroeder: I think that takes care of it.

Q. This device that I have just handed you, please state what that is.

A. Why, this is really a little testing device we made for testing. Of course this is a replica, really, of a testing device that we made. It is not the original one.

Q. What became of the original one?

A. We have burned it up in 1925. We had a fire.

Q. When?

A. In 1929.

Q. You had a fire at the plant?

A. We had a fire in the plant and we burned up practically everything we had in there.

Q. This device has just been made within the last few months to show the exact construction of this device you had in 1929, is that correct?

A. That is correct, yes.

Q. What was the purpose of this device?

A. This was really nothing else but a testing device, in itself. We were testing heating elements with it,

247 for the life of the heating element. We had some trouble prior to that time with heating elements burning out, and our man really suggested it. We have one of our men in the shop there who was working on this

kind of a job and his other job was shipping clerk, and besides he was going to night school, an electrical school, and he suggested this device. In fact he suggested the automatic cigar lighter we should make, but at that time I kind of was not interested so much in making automatic cigar lighters.

Q. What was his name?

A. Joe Halmo.

Q. He made up the device of which this is a replica, and made it up to test heating elements?

A. That is what it was made for, testing heating elements just to see the life of a heating element, how long they would last.

Q. Please explain to the Court the parts of this device and how it operated.

A. Well, this hasn't got very many parts. It is just a very simple device. We have one contact here which is a plain metal. This is a plain mental acting as a support.

Mr. Wiles: Q. That is the curved arm that comes
248 up from the base is the plain one?

A. Yes.

Q. I want to get that for the record.

A. That cover was a plain metal, as well as this is a plain metal (indicating).

Q. The one that holds the heating element?

A. Yes.

The Court: Q. The one below?

A. The one just below it. The one below is supposed to be a ground. This is a ground wire here (indicating).

Mr. Schroeder: Q. That goes up through the center pin of the heating element?

A. That goes up through the center pin of the heating element. This one here—

Q. Referring to the other lead wire?

A. Both of them. I don't know exactly how that is. I didn't make the device.

Q. Just point out to the Court where the bimetal thermostat is located.

A. The bimetal thermostat is right on the top of the heater.

The Court: Q. And connected with the arch?

A. And connected with this point, this arch (indicating). In here we have a contact point. I don't know,
249 maybe it might have been some automatic contact point.

Mr. Schroeder: Does the heat from the heating element cause any action on the part of that bimetal thermostat?

A. Yes, it does. When this is in contact (indicating), before we start operation—

The Court: That is, the arched part is in contact with the straight piece of metal?

The Witness: Yes, and when we heat this part (indicating), it walks away from this contact and breaks the contact, and when it comes down again it re-contacts again.

Mr. Schroeder: Q. In other words, this gives you an intermittent action causing the heating element there to be energized and de-energized?

A. That is correct.

Q. Do you recall about the time interval that there was between operations back in 1929, with this other device?

A. The time intervals? I did not understand the question.

Q. How long did it take, if you recall, for this device to snap on and then snap off?

A. Well, it was something like one minute, in one-minute cycles. We made it purposely that way so
250 that this heating element should cool off pretty well before it started again. It was just a matter of adjusting it to whatever we desired, the timing.

Q. What was the reason for these tests? That is, how did you happen to develop this testing device? What were you trying to accomplish?

Mr. Huxley: I object to that on the ground he has already covered it.

Mr. Schroeder: Q. As I understand it, it was to develop a satisfactory heating element?

A. That is correct.

Q. And you wanted to give it an intermittent treatment?

A. That is correct.

Mr. Schroeder: I would like to offer that in evidence, then, as DEFENDANT'S EXHIBIT F.

The Court: It will be admitted.

(The device was so marked.)

Mr. Schroeder: Q. I hand you a pair of drawings, a small one marked for identification as Defendant's Exhibit H, and the larger one as Defendant's Exhibit I, and ask you to state what these are, if you can.

A. These are some sketches I made back in 1933 on some cigar lighter which we were really altering into
251 a thermostatic lighter.

Q. Can you state the exact date that you made those drawings?

A. Yes. That is on the drawing right here, September, 1933.

Q. September, what day?

A. September 26th.

Q. This is your signature that appears on each of these drawings, "J. Sinko"?

A. Yes.

Q. September 26, 1933?

A. Yes, yes.

Q. That signature and date and these drawings all appeared on that sheet at that particular date?

A. That is right. That is right.

Q. To whom did you show these particular drawings?

A. Why, I don't exactly know how many people have seen them, but I know there were several people who have seen the sketch and the lighter.

Q. Do you recall showing them to anybody back about that time, shortly after September 26, 1933?

A. Yes, it was shown. In fact it had been seen by people from our shop, and we had an outside man
252 who has seen the article as well.

Mr. Schroeder: I would like to offer those two drawings as DEFENDANT'S EXHIBITS H AND I, and if there is no objection I would prefer to substitute photostatic copies of them.

Mr. Huxley: Quite all right.

The Court: They will be admitted.

(The exhibits were so marked.)

Mr. Byrne: May we have photostats of those?

Mr. Schroeder: I will see that you get them.

Mr. Huxley: Of course we can examine the originals.

Mr. Schroeder: Examine these at any time.

Q. Now after completing these drawings that you have just identified what did you next do?

A. I turned the drawings over to one of our men who was an experienced man at that time and I instructed him. I gave him a cigar lighter originally which really was one of our competitor's lighters. It was a Cuno lighter, and I instructed him to make those little changes. It really was not very much of a change in it. It was just to put

a thermostat in between the heating element and the movable plug which he had in it.

Q. I hand you a device marked for identification as
253 Defendant's Exhibit J and ask you if you can identify that.

A. Yes. That was that lighter we have revised for a thermostatic lighter at that time.

The Court: Is that the Cuno?

Mr. Schroeder: That is the Cuno lighter.

The Witness: The Cuno lighter.

Mr. Schroeder: Q. Is that the lighter that you turned over to Mr. Drake with those drawings, instructing him to embody these changes that are indicated on this drawing?

A. Yes, that is the lighter.

Q. The plug part is the same?

A. The plug part is the same. I don't know, we just were using a standard socket on that thing. It apparently looks the same. I don't know.

Q. I notice that the body portion of this plug is broken. Can you state when and where this was broken?

A. Well, I tell you, really it was partly broken when our man bored that hole on it. He had to bore that hole larger to accommodate a spring for the changes. The other part was really broke in your office there when I took it over to you to examine it.

Q. How long ago was that?

254 A. I don't know. Three months ago or something like that.

Q. Well, state the circumstances. Did I ask you to take the device apart so that you could show me the inside of it?

A. Yes, that is correct. I was trying to unscrew it and I couldn't unscrew it, and you gave me a plier. You pulled a plier out and we tried to twist it with a plier and we wrenched it off.

Q. Will you point out to the Court the thermostat in this particular unit and the latching device, and explain for the record just how the device operates?

A. This device is really operating very much like our standard cigar lighter that we are presently making, with the exception that we have changed the socket. We are using a metal socket and we made it so that it was more adaptable for the manufacturers for use, from appearance reasons. Otherwise it works practically like our lighter.

We have a "U" shaped thermostat in here which is fastened down with a little stud in the center and goes through the heating element in here (indicating), and when this lighter is together this has a movement in it. The
255 knob has a movement. When you push this in (indicating), that just engages in this bender part of the thermostat and stays together until it reaches a certain temperature.

Q. Then what happens?

A. Then it jumps out.

Q. It jars open?

A. It jars open, just jumps out.

Q. Now at the time Mr. Drake completed this device, or after he had completed it, when did you next see it?

A. I seen that on the 16th of October in the afternoon.

Q. How do you fix that date?

A. I just was buying a house at that time, and I was out in the morning to close some of my deal with the owner, the past owner of the house. I bought some certain carpets and that kind of thing from them and I went out in the morning to pay for it, and by the time I came back why they were telling me, they were pestering the life out of me.

Q. Do you have a receipt that gives you that exact date?

A. That is the date.

Mr. Huxley: What date was that?

Th Witness: October 16th.

256 Mr. Huxley: What year?

The Witness: 1933.

Mr. Schroeder: Q. Now, in the afternoon of October 16, 1933, did you operate this same device?

A. Yes.

Q. Please state where it was operated and who was present.

A. I operated that in my office.

Q. State, if you will, how it was operated and what the results were.

A. We just connected it to the transformer. I have a transformer in the office that I was using for short tests. When I come back Mr. Drake, who was making the lighter, he showed it to me. It was finished and he told me they were testing it already before I came in.

Q. Did it operate satisfactorily?

A. It did operate satisfactorily.

Q. The switch was released by the thermostat and it popped open when it reached incandescence?

A. The knob popped open when the thermostat released it.

Q. At that time the insulating sleeve here was joined to the part that is broken off here at the base, was it?

A. It was joined in kind of a three-quarter way.

257 Part of it was broken off at the prior time.

Q. But that did not show in the item as you saw it then?

A. No, it didn't show in the item.

Q. How did you hold this metal knob in the insulating sleeve?

A. I just have a little stud in there on the side of this knob, and we cut a clearance hole in the plug which allows this knob to go back and forth to the desired length of movement.

Q. The socket member, as I understand it, has two terminals that supply current. Please state how the current passes from the socket member terminals into the plug, where the contacts are?

A. The contacts, one is on the base of the plug which is connecting—

Q. That is the cup member you are pointing to?

A. I am indicating the shell, which the contact member in the shell is connected with the heating element cup, and the other part of the member is contacting with the socket member itself.

Q. Except for these improvements that were indicated in these drawings, which as I understand it involved putting a thermostat down in this head, putting a headed screw or collar button connection on the sliding handle,

258 enlarging the bore of that insulating member so that it would take a larger spring, and putting in a small screw to limit the travel of the knob portion of the lighter, the rest of the device was the standard equipment Cuno lighter?

A. That is a Cuno lighter exactly just as the Cuno lighter was, with the little changes. Of course this heater element cup was used just because when we took it apart, I believe, we destroyed it. That was riveted in it.

Q. You put on a new heating element?

A. We put a new heating element in it.

Mr. Schroeder: I would like to offer that plug in evidence as Defendant's Exhibit J.

Mr. Huxley: I object to that as immaterial. It is long

after the date of the Mead patent and also of the Cohen patent. I think it is earlier than the Johnson patent, and I don't see that it has any materiality to that; but it is long after the dates of the Mead and Cohen patents.

Mr. Schroeder: It is nearly a year prior to the Johnson patent, and it is our position that it is an anticipation of the Johnson device.

259 The Court: I will admit it for that purpose.

Mr. Byrne: We have gained something. We have found an alleged anticipation.

Mr. Schroeder: That is Defendant's Exhibit J.

(The exhibit was so marked.)

Mr. Schroeder: Q. In this device Defendant's Exhibit J, when the plug is in its normal position in the socket you have two contacts on the socket member in engagement with the two contracts on the plug member?

A. Correct.

Q. How is the circuit closed?

A. We are closing it through pushing the knob in the plug body itself, and through that we close the circuit.

Q. Now if this thermostat is heated up so that the arms are spread out in a position where they would release this pin, can you re-engage or rather can you close the circuit by holding the knob in?

A. You could if you pushed it down far enough.

Q. On one of these drawings I see a notation, "I see this drawing today, December 24, 1933. Also see working samples of same. J. R. Ayotte." Did you see that notation put on this drawing?

A. Yes.

260 Q. Please state the circumstances.

A. I know Mr. Ayotte for probably the last ten years. He was an inventor. He was an inventor of a cigar lighter himself, and in fact he was the very original first manufacturer of the wireless cigar lighter.

Q. Do you remember the name of his company?

A. It was Allstate Electric Company.

Mr. Schroeder: Your Honor may recall that one of their lighters was put in that other case.

The Court: Yes.

Mr. Huxley: What is that name?

Mr. Schroeder: Ayotte.

Q. Did you show Mr. Ayotte these drawings?

A. I did.

Q. Did you show him this Defendant's Exhibit J, the plug?

A. No, I did not. Which plug is that?

Mr. Wiles: This one.

The Witness: That plug there? Oh, yes, that was shown. I thought you meant the flat iron plug.

Mr. Schroeder: Q. Do you recall the date on which you showed him this device?

A. Yes, I recall the date. It was on one Sunday
261 morning in the same year, in December, just before Christmas. He came in with some idea of his own. He always had some kind of an idea. Every time he came in to see me he had some kind of invention himself, and he had a small pocket cigar lighter. He wanted to sell the idea to me. He thought there could be a million sold of them. In the meantime I told him, "I am not so much interested right now in that kind of a venture," and I showed him our sketch that I made. I told him, "If you sign this sketch for me I will show you some of my developments that I am working on now."

Q. That is the sketches Defendant's Exhibits H and I?

A. Yes, correct. After that I showed him. I gave him the sketch to sign and then I showed him a cigar lighter operating in the office there, and that is the time he has seen it.

Q. I hand you a plug that has been offered by plaintiff as Plaintiff's Exhibit 2 and ak you if that is one of the plugs of your manufacture?

A. That is correct.

Q. To whom do you sell that automatic cigar lighter?

A. We sell this at the present time to the Oldsmobile Company and Willys-Overland, the Hudson Motor Car
Company, and we sold some to Reo Motor Car, and
262 the General Motors Trucks. That is all the business we have right now.

Q. These lighters that you refer to, do they all have the same knob as Plaintiff's Exhibit 2?

A. No. The knob is always changing with the specification of a manufacturer, whatever he may require.

Q. Could you state who this particular plug is made for?

A. That was made for the Hudson Motor Car Company specification.

Q. That is exactly the same as the Oldsmobile lighter except for the ornamental button?

A. That is correct.

Q. Before selling any of these lighters, before getting any actual orders, did you have samples prepared and release those to the auto trade?

A. Yes. We had been working on that thing quite extensively before we have really shown to the auto trade.

Q. When did you first release samples to the auto trade of this particular lighter?

A. We must have been releasing those samples, the first samples, some time back in April or May, 1938, what we originally gave out.

263 Q. When did you get under commercial production?

A. When the first order was received, which was, I believe, toward the end of May or June in 1938. That was the time we got under production.

Mr. Schroeder: I would like to offer in evidence a certified copy of the file wrapper of Johnson Patent No. 2,129,374, one of the patents in suit, as Defendant's Exhibit K.

The Court: It will be admitted.

(The exhibit was so marked.)

Mr. Schroeder: We have already offered the file wrapper of the Cohen patent as Defendant's Exhibit L and the display stand as Defendant's Exhibit O. I don't know whether your Honor would care to have this operated.

The Court: It was operated during the opening statements.

Mr. Schroeder: Yes. This particular unit, we might say, has been designed to be used in cigar stores and it has a transformer in the base so that you can use it with ordinary 110 volt current. The plug member is not intended normally to be taken out of here for use. To use it you merely push this in (indicating), and this thing heats up and this pops out, but this has been made up so that you can take any of our standard equipment cigar lighters and put it in the place of the one that is shown here.

264 Mr. Huxley: May I ask, Mr. Schroeder, whether that is on the market?

Mr. Schroeder: It is not on the market at the present time. This was made up at Mr. Wiles' suggestion, but it is a device that we believe can be marketed.

The Court: You expect to market.

Mr. Schroeder: Yes. We also obtained a conversion unit to transfer the DC current we have in the loop here to AC current, and if your Honor cares to use that we can put it in. It is a rather bulky unit.

The Court: I don't believe it is necessary. I saw it in operation in the opening statement. I think that is sufficient.

Mr. Schroeder: It can also be operated with the plain-

tiff's battery here, but not through the transformer. That is all the direct examination.

Mr. Wiles: Just a minute.

Mr. Schroeder: Just a couple of more questions, if I may.

Q. In the manufacture of your standard equipment lighters do you test each one of these units with the socket plug before you send them out to the auto trade?

265 A. No, we don't.

Q. Are the plugs of your various standard equipment lighters interchangeable?

A. They are.

Q. Each one of your plugs has its own thermostats that is operated by the heating coil on the plug?

A. That is correct.

Q. And they are interchangeable with any of the standard equipment sockets?

A. They are interchangeable. This heating element here is interchangeable with any other heating element we may supply later on. We sell this heating element as a separate unit and this heating element is carrying a thermostat within itself, so it readily has to fit any other base we may send out later, because it is part of our sale. We have this handled as a separate item.

Q. This thermostat that is shown in that particular unit that you have we notice is an arcuate member supported on two arms. Will you explain to the Court the action of that thermostat when it is heated up?

A. Your Honor, this thermostat is just formed up into a ring shape with two legs, which is holding on the base of the supporting member, and we have four little lugs in

266 the center of this ring member which is engaging the shoulder under this screw. There is a little shoulder there (indicating). When we put this together the plug member, when it is pushed together with the thermostat, this little projection on the thermostat will engage under the shoulder so they stay together until heated.

Q. Would it be correct to describe the action of that thermostat as the petal on a flower? That is, in opening it swings out and it also increases in diameter?

A. Yes. The way this thermostat is worked, it works a little differently than probably any other thermostat on a cigar lighter that we know at present. We have this narrow base which is holding the thermostat in together with the heating member, and this area, when we heat it, why the coil, it expands four directions. This member goes

that way, that one comes this way here, and this one follows the same direction in cooperation with the other (indicating), so that that is enlarging the inside diameter of the thermostat ring, and naturally it would release from the plug.

Q. Your thermostat, then, in the two parts has four little lugs that actually form the final connection?

A. That is correct.

267 Q. In the manufacture of these units of yours how are the thermostats made and assembled into this unit?

A. We just blank this thermostat out on a punch press.

Q. Blank it out of a flat sheet of metal?

A. Just like any other ordinary metal, and then we perform two forming operations on it. After that we rivet it, assemble it in the heating unit, then we use a small tool, a little forming tool, which pushes the thermostat into shape where deformation may have been caused due to riveting it together with the other member. We don't really have much of a testing or trouble with the article after it is assembled.

Q. That last finishing operation just trues the thing up to size?

A. That just trues it up to size.

Mr. Schroeder: That is all. Cross-examine.

The Court: I suppose your cross-examination will be rather lengthy.

Mr. Huxley: I imagine it will be. Shall we adjourn?

The Court: Yes, we will adjourn.

Whereupon an adjournment was taken until Wednesday, March 22, 1939, at 10:15 o'clock a. m.

268 Wednesday, March 22, 1939

10:15 o'clock a. m.

Court convened pursuant to adjournment.

Present:

Messrs. Wiles
Schroeder
Chritton
Byrne
Huxley.

Mr. Schroeder: We would like permission to ask Mr. Sinko just a few more questions to clear up part of the record here.

The Court: All right.

Mr. Schroeder: Also, this morning we found another patent which we would like to have included in our Exhibit A, merely to show the state of the art. It is Waller patent No. 1,779,455, issued October 29, 1930, for an automatic control electric plug.

I understand Mr. Huxley is willing to have it go in.

Mr. Huxley: I don't suppose it makes any difference whether there are thirty or twenty-nine patents, so I have no objection.

Mr. Schroeder: Mr. Sinko, will you take the stand, please?

269 JOHN SINKO, resumed the stand for further direct examination by Mr. Schroeder:

Q. Mr. Sinko, yesterday, in testifying regarding Defendant's Exhibit F, you stated that the original was destroyed in the fire in 1929?

A. That is correct.

Q. Will you please tell us a little about that fire, the nature of it, the extent of the damage, and so on?

A. We really had a very bad fire. I would say almost everything burned in the shop. We had an explosion from a gas main line. Somehow it got loose and the shop got filled with gas and we had a pilot light on our furnace which ignited the gas that was assembled and we had an explosion which blew up our roof and everything that was inflammable in the shop practically was destroyed.

Q. Did this result in your having to shut down the plant for a period of time?

A. We had to close about six months, out of operation not entirely, but gradually we would come in as we cleaned out the place; practically took six months before we
270 were able to start our business in a normal way.

Q. The most of the damage in this fire was in the front of the building, where your records were kept?

A. No, not exactly; it was all over. The gas blew up at once in the building, exploded at once all through the building, and naturally, where we had inflammable material it was burning.

Q. That was how the original device, of which Defendant's Exhibit F is a replica, was destroyed?

A. That is how it was destroyed.

Q. In your testimony yesterday, occurring on page 180, you were asked to point out to the Court the thermostat in this particular unit, Defendant's Exhibit J, and the latching device, and to explain for the record how the device operated, and you answered that this device really operated very much like your standard cigar lighter that you are presently making, with the exception that you had changed the socket?

A. I meant by the socket that the release knob is moving in and out. I call this the socket for the knob.

Q. You mean the socket portion of the plug member?

A. I mean the socket portion of the plug member; that is correct.

271 Q. There was no change made?

A. No change was made on the base socket.

Q. The one that has the current supply terminal?

A. That is correct.

Mr. Schroeder: That is all.

Cross-Examination by Mr. Huxley.

Q. As I understand it, you put the automatic cigar lighters of the type of Plaintiff's Exhibit 2 on the market in 1938; that is correct, is it not?

A. That is correct.

Q. Before that, had you developed and marketed or attempted to market—

A. We were attempting to market them for the last two years.

Mr. Huxley: Wait a minute. Let me finish the question.

Q. Were you attempting to market what was known as an instantaneous cigar lighter?

A. We had, prior to that; yes.

Q. That was about 1936 and 1937?

A. Yes.

Q. What sort of a lighter was that, how did that 272 operate?

A. That was supposed to heat the coil up instantly. We were using a very short coil in the cigar lighter plug which, due to the over-resistance from the current in the element, it heated up instantly. We had a thermostat in the socket base to prevent burning out the element.

Q. That is, you had two coils; is that right?

A. We had two coils in the cigar lighter; yes, sir.

Q. And after the coil from which the cigar would be

lighted was heated, then the thermostat operated and switched the current to another coil?

A. When the thermostat disengaged that switched the current, part of it, over to the other coil.

Q. Over to the other coil?

A. To the base coil.

Q. Can you produce one of these lighters?

A. I do not have one here.

Q. Did you market those?

A. We made some samples.

Q. You made samples?

A. Correct.

Q. But you never marketed them?

A. No, we never marketed them.

273 Q. Will you get one of those and have it here this afternoon?

A. I will bring one over, yes.

Q. Now, referring to the drawings which are in evidence as Defendant's Exhibits H and I, when were those drawings made?

A. The same day as the date on them, in 1933, on September 27th.

Q. Who made them?

A. I did.

Q. With the exception of the notation on Defendant's Exhibit H, which says, "I see this drawing today, December 24, 1933. Also see working samples of same J. R. Ayotte," with the exception of that is all the writing on there yours?

A. Everything is mine.

Q. You put it on at that time, did you?

A. I put it on at that time; correct.

Q. In September, 1933?

A. That is correct.

Q. Were all the figures that are shown on there?

A. All the figures showing there.

Q. They were put on in September, 1933?

A. Unless somebody marked on there something else.

274 Q. What was marked there by somebody else?

A. I don't know. The drawing was all from my hand; that is correct.

Q. That is, you wrote all those notations?

A. I wrote all those notations, yes, sir.

Q. Where have the originals of these drawings been since 1933?

A. Part of it was where we altered that lighter. We took a sample at that time and I turned it over to our experimental man, who made the lighter.

Q. What was his name?

A. William Drake.

Q. Did he return the drawings to you?

A. He returned the drawings to me, yes, sir.

Q. When was that?

A. I kept them in my filing cabinet.

Q. At the Sinko plant?

A. Yes, sir.

Q. When did you turn those drawings over to your counsel?

A. Must have been three or four months ago.

Q. So, from September, 1933, up to the time you turned those drawings over to your counsel, three or four months ago, they were continuously in your possession at your
275 plant, were they?

A. That is correct.

Q. With the exception of the time when you turned them over to Drake?

A. That is correct.

Q. Tell us a little more about this Ayotte, how you happened to see Mr. Ayotte when he put this notation on here.

A. He knew us the time back before. He made some experimental models for my cigar lighter about 1930, and from then, of course, I knew him before that time, and from then, maybe once a year or every second year he would come in with some article he was proposing for us to manufacture. This time he had a small contact cigar lighter. He came in and he was suggesting to me I should take the cigar lighter from him for putting on the market. We examined the lighter and I figured it was not the thing exactly that I would like to make, so I really turned him down. Meanwhile, we were talking about cigar lighters back and forth. He had some various ideas about cigar lighters and I had some new ideas on a cigar lighter.

Q. As shown on these sketches, Defendant's Exhibits H and I?

A. I show him a cigar lighter if he sign my sketch.

276 Q. Did you ever turn those drawings over to Mr. Ayotte?

A. I did not turn it over. It remained in my office.

Q. He never took them away with him, or anything of that kind,—Mr. Ayotte?

A. No, he did not take them away; no.

Q. Did you ever file a patent application on the construction shown in the drawings?

A. No. I filed a patent application, not quite in that shape, I filed an application in later years.

Q. You did as a matter of fact file an application in 1938, did you not? Will you examine that and see whether you filed one like that?

A. That was filed, I believe, in 1938; yes.

Mr. Huxley: The application is offered in evidence as PLAINTIFF'S EXHIBIT 21.

Mr. Schroeder: That's objected to, your Honor, on the ground it is a confidential secret application which is not entitled to be used as a public record. We are in interference with this other party and they have access to our files for a limited purpose. I also think that the application is immaterial, but I don't think it is proper to make this a matter of public record at this time.

277 Mr. Huxley: There is an interference between this application to which I have just referred and an application to Mr. Johnson of the plaintiff company here. We have a perfect right to have access to that application. We wish to show that this application is as a matter of fact an admission against interest. Also, that the device which has been referred to as 1933 was nothing more than an abandoned experiment because no application on it was filed until 1938. I don't see that there is anything of a confidential nature here, but I would be perfectly willing it should not be open to the public in that the exhibit may be kept secret or impounded in some way so that if counsel has any objection to this being printed in the Court of Appeals or anything of that kind, that may be safeguarded, but I think it should be considered in this case before your Honor. It is in no way confidential so far as the plaintiff is concerned.

Mr. Schroeder: We have no objection to their examining the contents of this file. They are permitted to do that, but when it is put in evidence or becomes an exhibit—

The Court: Counsel suggests he can guard against that. I think that may be done.

278 Mr. Schroeder: That will be all right.

Mr. Huxley: With that understanding then we will offer that in evidence as Plaintiff's Exhibit 21.

Mr. Schroeder: Is that a certified copy?

Mr. Huxley: No, that is not a certified copy.

Mr. Wiles: We don't object.

Mr. Huxley: If there are any errors found here they may be subject to correction.

Mr. Wiles: Certainly.

The Court: It may be admitted.

(The exhibit was so marked.)

Mr. Huxley: Q. Mr. Sinko, would you be kind enough to write what I dictate: "Develop radius change over Cuno cigar lighter plug to put in thermostat catch using a 6-32 brass screw and be sure bore hole larger and plug up opening in knob. Spring to touch element on bottom Cuno cup" and then just sign your name, will you, Mr. Sinko?

A. (Witness does as directed.)

Mr. Huxley: This paper is marked for identification as Plaintiff's Exhibit 22.

(The paper was so marked.)

That's all.

The Court: Anything further?

279 Mr. Schroeder: No. We call Mr. Paulsey.

B. A. PAULSEY, a witness called on behalf of defendant, having been first duly sworn, testified as follows:

Direct Examination by Mr. Schroeder.

Q. Please state your name, residence and occupation.

A. My name is B. A. Paulsey, I am a bimetal salesman for W. M. Chase Company. I live at River Forest, Illinois.

Q. Are you here in response to a subpoena by the defendant?

A. By the defendant Sinko Company, true.

Q. Please state whether you are interested in this suit, that is, whether you have any ownership in the Sinko Company or in the plaintiff company?

A. No, none at all.

Q. What is the nature of the business of your company, the W. M. Chase Company?

A. Why, the greatest percentage of our business is manufacturing and selling thermostat bimetal. We manufacture also a supplementary line of automatic laundry valves. That's a minor line with us.

Q. What proportion of your business would be de-
280 voted to these valves?

A. I would conservatively say about 15 per cent.

Q. And where is your company located?

A. In Detroit.

Q. And you are their local sales manager?

A. I am a salesman and sales representative through this area.

Q. What is this bimetal used for generally that your company furnishes?

A. Well, it is used for control or indicating of the regulators wherever temperature is a factor, such as room thermostats or furnace controls, or in a home for electrical appliances, circuit breakers.

Q. Could you give us a list—you can refer to your notes—of the various heating appliances which your company furnishes the bimetal for to be used in thermostats?

A. Well, now in the home various articles, such as room thermostats, furnace controls, air conducting ducts, gas refrigerators, electric irons, toasters, waffle irons, percolators, circuit breakers, oven thermometers.

For the automobile we make bimetal that goes into ammeters.

281 Q. Just a minute. That list of articles you just gave, are those all articles that are found in the ordinary modern home?

A. That's true, yes, in the ordinary average home I would say.

Q. Now please state, if you will, the various places that bimetal is used in an automobile in thermostats?

A. I will refer back to my list here. Ammeters, voltmeters, volt regulators, automatic chokes, exhaust manifold heat controls, gasoline, gas oil pressure, gas water temperature indicators, cigar lighters, shock absorbers, radiator circuits, control valves, circuit breakers, automobile carburetors. That's all.

Q. Those are all instances of where thermostats are employed in the ordinary or at least in the modern type of an automobile, or may be used?

A. That's true, yes.

Q. I hand you a little device marked for identification as Defendant's Exhibit M, and ask you if you can state what this is?

(The device was marked for identification.)

A. This is an automobile circuit breaker that is manufactured by customers of ours to whom we supply thermostatic bimetal. It is used in place of the ordinary

282 fuses, a manually reset fuse, an automatic fuse or automatic circuit breaker.

Q. Will you explain to the Court, please, just how that automatic device works?

A. Yes. This bimetal element operates against a spring pressure here, and in the event there should ever be an overload or short circuit in the wiring system instead of the fuse blowing out, as the ordinary fuse would and have to be

replaced by another fuse, the current passing through the bimetal, due to the fact of the resistivity of the bimetal, heats the bimetal itself and tends to deflect or bend or warp and break the circuit, thereby protecting it, and instead of having to remove this element you merely relatch this manually after the bimetal cools, just reset it back in place again and it is all ready for service.

Q. How long has your company been furnishing bimetal for use in thermostats of various kinds?

A. We have been in the business since about 1923 or 1924, I should say.

Q. And can you give us the temperature ranges in which the thermostats normally operate in these various devices that you have listed as used in the home or in an automobile?

283 A. I can refer here to my list.

Q. I won't ask you to give us the list of them, but do you have that available if anybody wants to know?

A. That's right; yes.

Q. Now, we are interested particularly in a cigar lighter. Can you tell us approximately the temperature range in which the thermostat of a cigar lighter must operate?

A. Yes. I would say anywhere between 350 and 600 degrees.

Q. Is that Fahrenheit or Centigrade?

A. Fahrenheit.

Q. And does your company have bimetal materials of various sizes and compositions to suit the particular needs of your customers?

A. Yes. As I understand the question we do manufacture bimetal to suit any particular application, depending on what the customer requires.

Q. Yes.

A. We can furnish it to him in any specific form whatsoever, according to the customer's requirements, either in the complete form element or made in accordance with their specifications made from dies or raw material,

284 say, in a strip element, so to speak, rolled down to the particular thickness the customer requires, and they can therefore form their own element. We either sell them complete or sell them in strip form. We don't manufacture any complete commodity, no complete device using bimetal, merely sell the bimetal to prospective customers or to manufacturers of complete equipment.

Q. But you will furnish it in the desired shape?

A. The bimetal element, that's true.

Q. If the Sinko Company asked you to furnish them a cigar lighter thermostat U-shaped, with these arcuate arms, such as shown in Plaintiff's Exhibit 2, if I understand your testimony you could furnish the thermostat part, and the Sinko Company would have to assemble it into a unit?

A. That's true, the bimetal element alone. We would not furnish anything else but the bimetal element ready for their assembly.

Q. And if for any reason the Sinko Company would desire a thermostat that would operate to give a greater movement than the one they are using at the present time, you could furnish them with a metal that would give a little faster action, or a little greater action?

A. I would not say with the metal you use now, no,
285 but we could perhaps reduce the thickness to give that.

The metal you use at the present time, I believe, is the most rapid available so far as circulation is concerned for the same type of element. In order to increase the sensitivity with the other factors we could, perhaps, reduce the thickness.

Q. Put it the other way. If the Sinko Company desired to use a thermostat that did not work so quickly you could furnish them with a different metal that would slow up the action, could you?

A. That's true. Yes, we have a variety of combinations, if that's what you mean, depending entirely on the temperature that the metal would be used.

Mr. Schroeder: That is all.

Mr. Huxley: No cross-examination.

Mr. Byrne: May I ask just one or two questions?

Cross-Examination by Mr. Byrne.

Q. Is the W. M. Chase Company a manufacturer of bimetal products, Mr. Paulsey?

A. Well, bimetal alone, yes.

Q. And it has been in business since, you said, about 1923 or 1924?

286 A. That is correct.

Q. And of course it did not bring into use at that time any bimetal when it went into business, did it? That is to say there was some in use after that. Relatively, this matter of bimetal production is as old as the hills, is it not?

A. Yes.

Q. It goes back quite a period of time?

A. That's right.

Q. And I believe you said you are salesman for the W. M. Chase Company?

A. That's true.

Q. And do you make your headquarters here in Chicago?

A. Yes.

Q. You sell to the Sinko Tool Manufacturing Company?

A. Yes.

Q. And you have been doing that for some time?

A. Well, I should say for the past two or three years.

Mr. Byrne: That is all.

Mr. Schroeder: I would like to call Mr. Ayotte.

287 JOSEPH RENE AYOTTE, called as a witness on behalf of defendant, having been first duly sworn, testified as follows:

Direct Examination by Mr. Schroeder.

Q. Please state your full name and your residence?

A. Joseph Rene Ayotte, Chicago, Illinois.

Q. Have you been engaged in the manufacture of cigar lighters?

A. Yes, since 1919.

Q. And will you state just briefly the work that you have done in connection with cigar lighters, just in a general way, the companies you have been associated with from the time you went into the cigar lighter business?

A. I went in the cigar lighter business on a fluid lighter in 1918, for table or office, made of die casting metal with a snap-on top. In 1920 I made a pocket lighter with the same material, with a snap-on top. I made the vitriol lighter that had a ball with three paws with 110 volts that you pass around when you get it out on the table. It will slide automatically, and you light it, and you put it back on the table and it shuts off.

288 Q. Can you state what period you came out with that type of lighter?

A. That was about 1920.

Mr. Huxley: I don't know whether this testimony is offered to show a prior use, but if so I object to it, your Honor, on the ground that there is no pleading to that effect.

Mr. Schroeder: It is not offered for that purpose. We merely want to show that the witness is thoroughly familiar with the cigar lighter art.

The Witness: Well, we sold about three and one-half million.

Mr. Schroeder: Q. Did you have a company of your own manufacturing cigar lighters at any time?

A. Yes.

Q. What was the name of that company?

A. Excel Metal Products.

Q. And did that company later change its name?

A. Yes, sir, two years afterward to All State Electric Manufacturing Company. That was in 1924.

289 Q. Who took over the patents and cigar lighter business of that company later?

A. All my cigar lighter patents that I had at that time was turned over to the Allstate Manufacturing Company, to Allstate Electric Manufacturing Company, whereas I was the president of that concern. I had a license for those patents to that corporation and I was also president. I have sold the patents to the corporation.

Q. Did you have a number of patents on cigar lighters in your own name?

A. I believe I must have about seven or eight.

Q. Do you know what became of the patents after the Allstate Electric Company went out of business?

A. When the Allstate—

Mr. Huxley: Objected to as immaterial.

The Witness: When the Allstate lighter—

The Court: What is the purpose of this?

Mr. Schroeder: I think we can skip it, your Honor. It probably isn't material.

The Court: All right.

Mr. Schroeder: Q. You are familiar, I take it, with the cigar lighter art?

A. I believe I do.

Q. You have testified that you have made a num-
290 ber of inventions of your own in this field. Did you ever hear of the Jessop Automatch? Wait a minute. Did you ever hear of the S. T. Jessop Company of Chicago?

A. Is that the Mead patent, do you think?

Q. That is the name of a company here.

A. I heard something like that, yes.

Q. I hand you Plaintiff's Exhibit 7 and ask you if you have ever seen one of these devices?

A. Yes, I guess I did see it.
Q. Where did you see one of these before?
A. No, I don't think I did see that. No, I didn't see that type, sir.
Q. After examining the inside of the lighter you are sure that you have never seen one of those?
A. No, sir.
Q. That is, you have never seen one?
A. No. I saw a patent similar to this. It looked something like that, like a Mead patent, I believe.
Q. Are you familiar with the Mead patent?
A. Yes, sir.
Q. Now, do you recall at any time having seen this cigar lighter, Defendant's Exhibit J?
A. That is a Cuno lighter. That is a Cuno lighter.
291 It used to be.
Q. Do you notice any changes in this particular model over the Cuno lighter that you are familiar with?
A. Well, the changes is that part inside here (indicating), the thermostatic parts in the back of the heating element; but the rest looks to me like just the same old Cuno lighter.
Q. I hand you Defendant's Exhibit H and call your attention to a notation on there and ask you if you can identify this?
A. Yes, sir. That is my name, all right.
Q. Did you sign that and make that notation?
A. Yes, sir.
Q. When?
A. On December 24th? That was a Sunday.
Q. What year?
A. 1933.
Q. Please state the circumstances that resulted in your making that notation. This, by the way, is a photostatic copy of the original drawing.
A. Yes, I can see that it is. I had a pocket lighter that I wanted to get Mr. Sinko interested in at that time. That is why I won't forget this type of lighter. That gave me
a lot of ideas, too, since. But it had a piece of glass
292 in the back of this; I mean Catalin, transparent material, that was outside of this when I saw it.
Q. There was a lens in the outer cup?
A. Yes.
Q. Was the lens broken or was it complete?
A. It was complete at that time, a button outside, out-

side that metal. You see over here, you see that now (indicating)?

Q. That was covered?

A. There was a lens over there (indicating).

Q. A button?

A. A button, removable, yes. So I had a lighter whereas that I have got a sample in my pocket here. I wanted Mr. Sinko to make this pocket lighter here. It was not patented also. I tried to get somebody to finance the proposition, whereas I couldn't find anyone at that time, so I called Mr. Sinko to make an appointment and I said, "I got something hot for you." I said, "As long as you want to go into the Bakelite concern yourself," I said, "I got something here."

I went to see Mr. Sinko. He said, "Can you make it tomorrow?"

293 I said, "Do you think you will be over in the plant?" He said, "Yes."

I go over to the plant and I show him the lighter. "Well," he says, "that will take too much money to put it over." We were chewing the rag and talking about the proposition and all that.

Then he says, "I got something, Ayotte, I want to show you to see what you think about it." He had kind of a transformer with a plate, a metal plate with a transformer, 110 volts reduced to 6 volts, and he just pressed that button on that lighter and it puffed out. It makes a little noise of some kind inside. So he got it out and it was lit.

Q. Is that this same device that we have here as Defendant's Exhibit J?

A. Well, that is the way that I remember this happened, you know. So he didn't want to show me the interior of this proposition unless I signed this paper. Maybe he thought I was going to beat him on the patent. So I did sign that paper, and I guess he had a couple of other sketches, I believe, that maybe I did not sign. I don't know.

Q. There is another, Defendant's Exhibit I (hand-
294 ing document to witness).

A. Maybe I signed it. I don't know.

Q. Did he show you this one too?

A. Yes, that is possible. That is possible that I saw this.

Q. But you remember that you saw this one for sure (indicating)?

A. I remember for sure that I saw that.
Q. On December 24, 1933?
A. That is right, because it was Christmas eve. You know I never forget that.
Q. After signing this drawing you say he permitted you to see the inside of this plug?
A. That is right.
Q. Did you take it apart?
A. That is right.
Q. How did you take it apart, if you recall?
A. Well, it was not broken. It was not broken like this, that I know of. It was not broken.
Q. Did you take it apart by taking that little side screw out?
A. Yes.
Mr. Huxley: I object to that as leading.
295 The Witness: He took this little part in the back, on the side here, and took it right off (indicating), and at the same time—
Mr. Huxley: I don't think the record will show what is being done.
The Witness: Also that is a hand-made heating element. This is his element and not the Cuno element. That is here (indicating).
Mr. Schroeder: Q. The question was, how did you take this plug member apart?
A. Well, I know about Cuno before. I saw a lot of these lighters before. I had several myself, you know.
Q. Will you just answer my question, Mr. Ayotte?
A. Yes.
Q. How did you take this plug member apart so that you could see the inside of it?
A. With a little side screw mounted with a moving member, whereas there is a slot on the insulator material plug. If you want more detail I can give you some more.
Q. That is, you took out that screw, did you, to take it apart (indicating)?
A. This little screw in the side.
296 Q. Yes.
A. Take this apart and this button comes out.
Q. You did take that apart on this particular date?
A. That is right, but it wasn't broken like this.
Q. Yes.
A. And this heating element here, that is a Sinko, made by hand or something.
Q. Are you interested in this suit? Do you own any

stock in the Sinko Company, or are you employed by the Sinko Company?

A. Not at all, no, sir. I lost everything in it. Somebody else got the money now, not me.

Q. When Mr. Sinko connected up this Defendant's Exhibit J with that transformer in his office, please state just what happened when he pushed the button?

A. Why, that is pretty far back, understand. It is pretty hard to remember. The only thing I remember, understand, is that little lighter that I have got that I tried to get him interested in, and about a lot of the details of words over five years ago it is pretty hard to remember, you know,

Q But do you remember—

A But I do remember that I saw this proposition here and I was surprised that this proposition was not
297 put up before, but it was put up.

Mr. Huxley: I just want to caution about leading questions at this stage.

The Court: Yes.

Mr. Schroeder: Q. All right. You have stated in your testimony up to this point that you went to Mr. Sinko's office the day before Christmas and he inserted this particular lighter, Exhibit J, in an electric circuit with a transformer?

A. Yes.

Q. And what did he do to demonstrate the device?

A. Well, he had a kind of a transformer which is to reduce the 110 volts to 6 volts, with about 18 amps, a transformer mounted on a little metal plate, as a demonstrator, and he had that right loose on the window next to a radiator there, between two windows, and I remember that when he pushed that button and he showed me this proposition, I says, "What is inside?" He won't let me see the inside unless I signed a drawing.

I said, "What do you think? Do you think I am going to run away with it?"

So he had a sketch made up there, and I guess he had some sketch there of the side, or something like that, that it was with—

298 The question is—

A. He asked me and I said, "Certainly," and I signed the proposition.

Q. The question, Mr. Ayotte—

A. And he signed me some propositions myself, that I got now.

The Court: Just a moment. Wait for the question.

Mr. Schroeder: Q. The question was, what happened when Mr. Sinko pushed this button in on Exhibit J? You testified he did that.

A. Yes. Well, it made kind of a little click, kind of a little noise inside that I noticed.

Q. What happened after that?

A. I looked inside and I found out it was shut off.

Q. Did this knob do anything?

A. This knob here, you see the light and then no light no more shows there. You see? You get the point? It shone like a light there and then it shut off.

Mr. Huxley: No leading him now, please.

Mr. Schroeder: I am not leading him.

The Witness: Something like that, I know.

Mr. Schroeder: Q. Well, Mr. Ayotte, I will ask you again if you will describe this test Mr. Sinko performed in your presence? State just exactly what happened
299 with the cigar lighter, just what you saw with this particular plug.

A. I saw the plug mounted on the plaque, whereas a transformer was mounted on that metal plaque. The lighter was mounted on that plaque. He opened up his drawer, or a file cabinet there. He picked up the plug, that is the plug or the lighter, if you want to call it that, and he went over to the socket that was mounted on that plaque and he put this in (indicating).

Now, it is pretty hard for me to explain if I saw the light that went right through from here (indicating), but I heard some little noise from the thermostat inside. So I asked him if he had kind of a thermostat or hard metal inside, or something like that.

"Well," he said, "I will show you a drawing here," so he opened up his file again, a narrow file, and he found some paper over there. I saw possibly, half a dozen.

The Court: Never mind about the paper. You told us about that several times.

The Witness: Then he made me sign the proposition.

The Court: Never mind about that.

The Witness: Then I take it apart and I looked at it.

The Court: Never mind about that. You have
300 gone all over that several times.

The Witness: That is it.

Mr. Schroeder: You may cross-examine.

Cross-Examination by Mr. Huxley.

Q. Referring to this exhibit, Defendant's Exhibit J, when you spoke of taking out a screw to take this apart you referred to a little screw about—

A. About 2/56, maybe, by looking at it.

Q. —slightly less than one-eighth of an inch in diameter and located adjacent to the flange on the black part of this lighter, did you not?

A. Of the insulator material.

Q. That is right. Referring to these drawings, and particularly to Defendant's Exhibit H, is that Defendant's Exhibit H, the drawing there, in the same condition with respect to the figures shown on it and the writing, as it was when you signed it?

A. Yes, I guess so.

Q. What was the answer? "Yes, I guess so"?

A. Yes, yes. There is no change that I can recollect, any change on it.

Q. But you are sure that the drawing is in the
301 same condition that it was when you signed it?

A. No, because it seems to me that is a photostat copy, this one here (indicating).

Q. I am showing you the original of that same sheet. Are you sure that that sheet is in the same condition that it was when you signed it, so far as the drawings and notations are concerned?

A. Pardon me. Can you show me the photostat copy now again?

(Counsel hands document to witness).

Mr. Huxley: I think we can agree that the photostat is just the same as the drawing, as far as that is concerned.

The Court: Yes.

Mr. Huxley: Q. You don't have to compare those.

A. That is the copy.

Q. Is that drawing in the same condition that it was when you signed it?

A. The same thing.

Q. Are you sure that all the figures there are just the same as they were when you signed it up?

A. Yes, sir.

Q. Are the notations on there the same?

A. The same thing, yes.

302 Q. How do you recollect that?

A. Well, I know it was a full page there, and I

don't see anything that was changed that I can see, that I can recollect.

Q. Did you ever have these two sheets of drawings, either sheet, in your possession?

A. No. I just signed this paper, like he signed for me. I haven't got no copy also.

Q. Then you left it with Mr. Sinko? You left the drawings with Mr. Sinko?

A. This drawing?

Q. Yes

A. Why, sure. He made this drawing, I am sure, this sketch.

Q. You never had those drawings in your possession?

A. I did not have this drawing in my possession, no, never did.

Q. Did you have a similar drawing showing substantially the same construction as this one, in your possession?

A. Well, there is something around that but not the same thing, no.

Q. What did you have?

A. What I had? Oh, maybe about seventy-five or one hundred different drawings of lighters now that 303 nobody knows in the world.

Q. Did you ever have a drawing that showed a thermostatic element inside substantially the same as shown here?

A. I have been with that since 1929, 1926, 1927. There was the Boyce Motormeter in Brooklyn. I made a switch with a thermostatic metal inside to put under the hood of the automobile, whereas it will touch the radiator, the top of the radiator, and the "U" shaped form of the thermostat will touch the top, making a contact like a switch, and light over the dashboard. I did not take a patent on that, and the Boyle Motormeter, when they see the proposition, do you think they will help me out to take a patent? Certainly not.

Q. Did you ever make any drawings of a cigar lighter with a thermostatic switch in it?

A. Oh, certainly. I can make you fifteen here, if you want.

Q. When did you do that?

A. I done that right after I was with the Norlipp Company. They didn't believe to spend money for patents.

Q. Did you ever call on Mr. Cohen?

A. Oh, sure. I even wrote Mr. Cohen in 1936 that I have a patent lighter that will revolutionize the
304 country in that industry. He wrote me the answer he was in Florida, I believe. I believe his patent attorney, Mr. Johnson, answered the letter.

Q. Did you ever see Mr. Cohen?

A. Oh, sure.

Q. Where?

A. In Bridgeport.

Q. Anywhere else?

A. Sure. I tried to see him in 1930 or 1931.

Q. Did you ever see him since then?

A. Yes, I did.

Q. Where?

A. I believe I see him last, that was December 2nd, between six and seven, in Chicago at the Congress Hotel.

Q. What year?

A. 1938.

Q. 1938?

A. That is right.

Q. Did you have any drawings there?

A. I have, maybe about twenty-five or thirty.

Q. What drawings did you have?

A. Thermostatic, and different kinds; all kinds of designs of lighters.

Q. What representations did you make to Mr. Cohen
305 at that time?

A. We were talking about different things, how things was going, and if he was still interested in a lighter, and he claimed he was, or something.

Q. Did you make any—

A. And they were going good on an electric shaver that they were making, and different things like that.

Q. Did you show Mr. Cohen some drawings that were substantially the same as this drawing, Defendant's Exhibit H?

A. Well, possibly around those lines.

Q. Did you make any offer to sell him the drawings?

A. No, I did not offer him the drawings but I offered him, if he will spend for a couple of patents for those lighters, I will show him something.

Q. Did you represent to him that it was your invention?

A. Absolutely.

Q. Did you make any remarks about anything that the Sinko Company had done?

A. I make a remark, possibly, to Sinko or to Norlipp.

Q. No, to Mr. Cohen at that conference.

A. I even told him about it, Mr. Cohen. I said, "You fellows are asleep on this lighter." I said when I was in Bridgeport, instead of going to Bridgeport to show
306 them what I had I was better off to take a patent at that time instead of spending the money to go down there. I was better off to get a patent. I went down there with half a dozen propositions which they were not interested in at that time.

Q. When you saw this sketch, Defendant's Exhibit H that Mr. Sinko showed you, what did you say to him?

A. What did I say to him?

Q. Yes. Did you make any claim of invention yourself?

A. I told him, "I got a lot of things," I said, "along those lines," but it wasn't what he showed me. Not at all. Even thermostatic metal today that you fellows make, there is some other way to make it. There is some other way to make it. There are a lot of ways to make lighters. Henry Ford makes motors, and also the Chevrolet, but the Chevrolet makes a different motor.

Q. Is there any writing on there that is your writing except the notation in the middle of the page of Defendant's Exhibit H? Is there any other writing on there in your handwriting?

A. Absolutely no.

Q. Look at the other one, Defendant's Exhibit I.

A. No. No, sir.

307 Q. Will you write this, please: "Develop radius"—

A. By writing?

Q. Yes, just write it out.

The Court: Have you got "radius" down? No, he hasn't that.

Mr. Huxley: Q. "Develop radius. Change over Cuno cigar lighter plug—"

The Court: He hasn't got "lighter" yet.

Mr. Huxley: Q. "—lighter plug to put in thermostat catch"—

A. Is that s-t-a-c? Is that "sketch" or "catch"?

Q. Catch.

A. K-a-c-h?

Q. "—using a—" these are figures, in figures, now, "—6-32 brass screw and be sure to bore hole larger and plug up opening in knob Spring to touch element on button. Cuno cup." Sign your name, will you?

A. Yes.

Mr. Huxley: I will ask to have that marked for identification as Plaintiff's Exhibit 23.

(The sheet was so marked.)

Q. When you saw Mr. Cohen at the Congress Hotel in December, 1938—

308 A. That was December 2nd.

Q. December 2, 1938?

A. Yes, sir, between six and seven.

The Court: Never mind. Wait until the question is asked.

Mr. Huxley: Q. Did you also see Mr. Johnson?

A. No, I went to see Mr.—

Q. Cohen?

A. Mr. Cohen, yes.

Q. You saw no one else?

A. Well, when I came in there, when I came in, there was Mr. Johnson, that I met. Mr. Cohen was not in the room.

Q. Well, did you see anybody over there except Mr. Cohen?

A. I see Mr. Cohen, Mr. Johnson and also Mr.—

Mr. Byrne: Cochrane.

The Witness: Cochrane, yes, that is right. There were three in the room, but Mr. Cohen was getting a shave.

The Court: Never mind that.

Mr. Huxley: Q. I am showing you Defendant's Exhibit H. Among the drawings which you showed Mr. Cohen did you have a drawing substantially the same as the center

309 drawing on Defendant's Exhibit H?

A. No, sir, no, not at all.

Q. You did not?

A. No.

Q. How many drawings did you show Mr. Cohen?

A. Maybe about twenty or twenty-five.

Q. About twenty to twenty-five?

A. Not exactly. I have those with me but I did not show him all the drawings.

Q. How many did you show him?

A. Possibly about four or five.

Q. About four or five?

A. Out of twenty-five or thirty.

Q. Where are they now?

A. At the house.

Q. Can you produce them by this afternoon?

A. Possibly, possibly no. Possibly. What time? At what time?

Q. Please produce those by this afternoon and have them here at 2 o'clock.

A. You couldn't make it tomorrow instead?

Q. No.

A. That is O. K., if they can be produced at 2 o'clock.

Mr. Huxley: That is all.

310 The Court: Any further redirect?

Mr. Schroeder: Just a few questions, your Honor.

Redirect Examination by Mr. Schroeder.

Q. How did you happen to go to see Mr. Cohen December 2, 1938, Mr. Ayotte?

A. I met Mr. Cochrane and he told me Mr. Cohen was in town, so I told him I had a patent wrench I wanted to dispose of at that time, and there was just about six or seven or eight years to run, and as long as he was in the automobile line I said, "Maybe we can make connections. As long as he has got my patent on the cigar lighter that the Norlipp people turned over to them, whereas I got an agreement with the Norlipp Company—"

The Court: Never mind. How did you happen to get in touch with him? That is the question.

The Witness: Then I talked to them. I said—well, I tried to get a little money out of them to dispose of this proposition, so he told me if I will go down to the Congress Hotel—

The Court: Answer the question, please.

Mr. Schroeder: Strike that all out.

The Witness: Scratch it out.

311 Mr. Schroeder: Q. How did you get in contact with Mr. Cohen that particular date? How did you know he was in town?

A. By Mr. Cochrane. I met Mr. Cochrane.

Q. Did he ask you to come and see Mr. Cohen?

A. I met Mr. Cochrane on Michigan Avenue and he mentioned that Mr. Cohen was in town. I said I would like to see the boys, that is all.

Q. Now, shortly prior to that did you testify by deposition in the suit, I believe, of Cuno Engineering Corporation versus Meels? I think that is it. It is a suit pending in Connecticut. Did you testify by deposition in that case?

A. That must be last fall. I guess I did.

Q. Yes?

A. Yes.

Q. Did you see these same drawings that you have just

been discussing at that time? I will withdraw that question. You have never had possession of these drawings at any time yourself?

A. No.

Q. And you did not show these drawings to Mr. Cohen?

A. No.

Mr. Schroeder: That is all.

Mr. Huxley: That is all.

312 DANIEL SZANTAY, called as a witness on behalf of the defendant, having been first duly sworn, testified as follows:

Direct Examination by Mr. Schroeder.

Q. Mr. Szantay, please state your name, residence and occupation.

A. Daniel Szantay, 6157 North Knox Avenue. I am secretary and treasurer of the Sinko Tool & Manufacturing Company.

Q. How long have you been with the Sinko Company?

A. Ever since its foundation. I was one of the founders in 1919.

Q. I hand you Defendant's Exhibit B and ask you if you have ever seen a device of this character in your plant?

A. Yes, sir. We have been manufacturing this article, that is, parts of it. We have made some of the tools for it and also the thermostatic bimetal that is inside of it. That tiny wire is wound around this thermostat, and due to the resistance it warms up and warms up the thermostat, and it opens up and creates and shuts off current.

Mr. Huxley: Mr. Schroeder and I have just arranged a stipulation. Through Mr. Sinko yesterday, this device,

313 Defendant's Exhibit B, was introduced, and also certain ledger sheets showing shipment of those devices, and also a plug which is attached to some sort of a heating iron.

Mr. Schroeder: That is Defendant's Exhibit D.

Mr. Huxley: Defendant's Exhibit D. I understand from Mr. Schroeder that this witness is merely a corroborating witness, and I am perfectly willing to stipulate that those devices were made and shipped as shown by the ledger.

The Court: All right.

Mr. Schroeder: That would cover this part of it. We also want him to corroborate on this Cuno type lighter.

Mr. Huxley: You better ask him about that.

Mr. Schroeder: Q. I show you Defendant's Exhibits H and I and ask you if you have ever seen these drawings before? These are photostats of the originals, and I am asking if you have seen the originals. Here are the original drawings. (Handing documents to witness.)

A. Yes, I remember very distinctly. Yes, sir.

Q. Do you remember the time that you first saw those drawings?

A. It was in September, 1933. Well, of course the date is on here, September 24th, but of course—can I state
314 any further, or is that enough?

Q. I believe that answers the question. I also hand you Defendant's Exhibit J and ask you if you have ever seen this?

A. Yes, sir.

Q. Can you state the time that you saw that particular device?

A. Well, before its change I saw it some time during September, but when it was under construction or change, why, it was about—it was around the 14th, 13th or 14th of October.

Q. Now, if I understand your answer correctly, you saw the original Cuno lighter before it was changed?

A. Yes, sir.

Q. Did you have anything personally to do with the changes that were made in that lighter?

A. Well, I had in this way, that our Mr. Drake, who was making these changes in it, was in a bit of a nervous stage at that time and he was a bit confused, and he asked my advice on certain questions, as to how he should go about it. Particularly, he was a little bit puzzled how to plug this shell up to make the connecting post, to fix the connecting post.

Q. Did he have the drawings at the time he dis-
315 cussed this with you?

A. Yes.

Q. And you went over these drawings with him, and the model? You helped him?

A. Yes, sir, I helped him, more in a technical way than anything else, just to apply the principle of it.

Q. Do you remember what Mr. Drake was worried about at the time? Did he state what it was?

A. Well, he was, or rather his wife was expecting a baby and he was kind of uneasy.

Q. After this device was completed what was done with it next? That is, what do you recall about this device?

A. Well, it was on a Monday. Mr. Drake worked on it Saturday and the early part of Monday. Of course, my office and Mr. Sinko's are adjacent, and he brought it to me. There is a transformer permanently in Mr. Sinko's office, and him and I walked into the office and tried it. Of course it worked but it took a little length of time. The element got pretty hot, so I told him to adjust it a little bit so that the timing would be a little bit more to the required heat. That is all there was to it. It seemed to have worked.

Q. Well, will you describe these tests that you carried on in Mr. Sinko's office that morning? Explain just
316 what you did to try out this lighter after it was finished.

A. Well, we have the stand that is hooked up to the current and with a connected wire, and the other side, the base, is like a ground, and you push the plug in and after a length of time it would heat up and would snap out.

Q. What was the result of this knob portion snapping out?

A. Well, I believe it dropped down the floor when taking it out, and the way I remember there was a glass crystal of some kind and it broke in the handling.

Q. Well, the thing I was referring to, you said you pushed this knob in and it heated up?

A. Yes.

Q. And then after a certain period of time the knob popped out?

A. Snapped out, yes.

Q. Did it continue to heat then?

A. No, no, it didn't, because it disconnected. We pulled it out, you know. After it snapped we pulled it out because it was disengaged from the current then.

Q. What condition did you find the heating element in then?

317 A. At that time it was pretty hot.

Q. The knob portion, was that in its collapsed position or was it extended?

A. Pardon me?

Q. When you pulled this plug unit out of this socket, where was the knob with respect to the rest of the plug? The thing I am getting at, was it pushed in or was it out in this position (indicating)?

A. Oh, it was out, yes. When it snapped it was left out by this spring.

Q. Did you try the thing out several times or just once?

A. Well, we tried it several times. As a matter of fact, Mr. Periolat was in the next office and I called him in and I says, "Pete, come in." Peter is his first name. We showed it to him. Of course, with that, you see, I was just about done, you know, as far as I was concerned. You see, I was through.

Q. The heating element didn't burn out in this thing?

A. No. It got pretty hot the first time, but after while he adjusted it a little bit and it was more to the reasonable heat.

Q. Do you recall whether any other tests were made on October 16, 1933?

318 A. Well, there were other tests but I was not there any more. I was not with it.

Q. That is, you didn't pay close attention to what was going on?

A. No, I didn't. We have another testing bench with a transformer, but it was in the back room and I didn't go with it any more.

Q. At the time of these tests was this end portion in the condition that it is now?

A. No, it was not. I can see that, because it was solid at that time. There was a little crack on it. In turning it out, there was some little crack. I don't recall exactly now.

Q. Do you recall whether there was any lens in here?

A. There was a lens in here, yes.

Q. You think that was broken in taking it out?

A. It was broken in taking it out, or something. I don't recall exactly, but I know it had a crystal in it, and it was cracked. How it happened, exactly, I can't say.

Mr. Schroeder: That is all.

319 *Cross-Examination by Mr. Byrne.*

Q. Mr. Szantay, what are your duties with the Sinko Tool & Manufacturing Company?

A. I have supervisory duties and engineering duties.

Q. You have supervisory duties in engineering?

A. Yes, sir.

Q. Have you had that work all of the time that you have been with the Sinko Company?

A. Yes, sir.

Q. That is to say, since about 1919?

A. Yes, sir.

Q. Are you familiar with all of the practices that go on by the Sinko Company?

A. I should.
Q. Well, answer my question, please. Are you?
A. Yes, sir.
Q. And you have been all along?
A. All along.
Q. Can you tell me how it is that these drawings, Exhibit H and I, came to light at this time, in view of the fact that Casco has been out on the market with an automatic cigar lighter for a long period of time?

A. Well, you see we have been working on cigar
320 lighters for years and years, and we have made various changes, and different ideas were involved, and when this came about, why, naturally we were digging in our files because we knew that we done certain things at certain times, and we simply dug it out. That is all.

Q. Who found these drawings? Did you?
A. Mr. Sinko did.
Q. Mr. Sinko found them. Who found the device?
A. That was all in Mr. Sinko's possession.
Q. In other words, it was not in your possession at all?
A. No, sir.
Q. Nor were the drawings?
A. Nor were the drawings.
Q. Now, did you see Mr. Sinko make this drawing, Exhibit H?
A. Yes. You see, I was—
Q. You saw him make it?
A. I saw him, not in this exact stage, but you know you make a hundred different sketches until you drain down to what it should be.
Q. Yes. In other words, you saw him making other sketches along this line?
A. Along this line, yes.

Q. You saw him doing that?
321 A. Yes.
Q. Where did he do that?
A. In his office.
Q. In his office. Well, did you see this drawing, Exhibit H, when it was completed?
A. Yes.
Q. You did?
A. Yes.
Q. He didn't ask you to sign it, did he?
A. Well, evidently he didn't.

Q. Well, answer my question. Did he or did he not ask you?

A. No, he didn't.

Q. Did you see him sign that drawing September 26, 1933?

A. I wouldn't say for sure.

Q. You wouldn't say for sure. Well, could you say for sure, when he signed that drawing, if you by any chance were present when it was signed?

A. Well, I only know more of it when it came to a decision that we make a sample of it.

Q. So that all you know about the drawing as to the time that it was made—and I am speaking of Exhibit H—is the date which appears thereon, isn't that true?

A. Yes.

322 Q. So that without that date you would be unable now to tell approximately when that drawing was made?

A. Oh, yes, I could tell without that date. I can tell without that date approximately. Without the date, of course, I could not say the day, but I could tell. I would say that it was in September, the later part of September, and that approximately two weeks later we made the sample of it.

Q. Do you make a considerable number of drawings down in your place, rough sketches and drawings?

A. Yes.

Q. You make quite a large number of them?

A. Well, it all depends, you know. You can make a large number or any number you want. A dozen may be a large number, just how you take it.

Q. Are you so constructed, in your mind, at least, that you can remember within a short time about when you made a drawing of a particular thing?

A. I did not—

Q. Answer my question, please. Can you tell, even after you have made a drawing and put it aside for years, approximately within a week or two of when you made it? Can you tell that?

A. Yes, I can, if it is of any value. Of course we 323 make things that don't mean anything and we throw them in the waste basket.

Q. But you feel you can turn back a year or two and say, without looking at a drawing or any other data to refresh your recollection, that you made it at a particular time?

A. Yes. My memory is pretty good.

Q. It would have to be pretty good if you could do that, would it not?

A. Yes, sir. I pride myself on having a good memory.

Q. Well, you have an extraordinary memory. Would you say that?

Mr. Schroeder: Your Honor, we object to this kind of cross-examination.

The Court: Yes, sustained.

Mr. Huxley: Q. How closely is Mr. Ayotte or Ayotti, whatever his name is, associated with the Sinko Tool & Manufacturing Company?

A. He is not associated at all.

Q. He is not an associate?

A. No.

Q. Has he ever been employed by the Sinko Company?

A. No, sir.

Q. Does he visit your place from time to time?

324 A. Yes, sir.

Q. How frequently has he visited your place within the last year?

A. Oh, I couldn't recall exactly. He probably was in once or twice. I don't always see him, you see. Mr. Sinko sees him. I very seldom have anything to do with Mr. Ayotte, and if I see him it is casual. Sometimes he waits outside in the office. I never had much dealing with Mr. Ayotte.

Q. You sort of avoid him, do you?

A. No, I don't avoid him but I have no occasion to talk about things with him. That is not my nature of business.

Q. You know that if he came near you he would talk to you about cigar lighters? You know that, don't you?

A. Well, he is quite wrapped up in it, yes.

Q. Yes. Were you present when this test was made on this Exhibit J lighter, which you say was a Cuno lighter?

A. Yes, sir.

Q. You were present?

A. Yes, sir.

Q. You just counseled with Mr. Drake, who was making that up, prior to that time?

A. Well, I advised him, helped him along, advised 325 him and counseled together, yes.

Q. You were present all of the time while this test was being made?

A. Yes, when the first tests were made.

Q. How many times did you repeat the test that you first initiated with respect to this Exhibit J?

A. Probably half a dozen times.

Q. Probably half a dozen. During which test did the glass break in it?

A. I wouldn't say for certain that it broke at that time, but it was cracked. Whether it was in the handling at that time or while we were making it I don't know, but it happened while we were handling the article that it cracked the glass.

Q. When after that test, which you say was in October, did you again see this device?

A. Oh, I would say that it was probably a few months ago now.

Q. In the meantime you did not see it?

A. No.

Mr. Byrne: I think that is all, Mr. Szantay.

Mr. Schroeder: Do you want to put on another witness?

The Court: I think we will start.

Mr. Schroeder: It will just take a few minutes, I 326 think, with this next witness.

The Court: All right.

JOSEPH HALMO, called as a witness on behalf of the defendant, having been first duly sworn, testified as follows:

Direct Examination by Mr. Schroeder.

Q. Please state your name, residence and occupation.

A. Joseph Halmo, 4010 Carrol Avenue; shipping clerk at the Sinko Tool & Manufacturing Company.

Q. How long have you been with the Sinko Company?

A. This coming June 21st it will be fourteen years.

Mr. Schroeder: I guess our stipulation won't require us to go into this.

Mr. Huxley: No.

Mr. Schroeder: Q. I hand you a device that is offered in evidence as Defendant's Exhibit F and ask you to state what this is?

A. This is a little apparatus I used in testing our heating elements. We had numerous complaints from our customers of elements burning out too rapidly. Our

sales manager advised me of this fact and he told me to make up a little testing apparatus whereby we
327 could find, by using various lengths of resistance wire in the element, what length of wire would hold without burning out. He also told me that I should find out the number of hours that a certain length of resistant wire would hold. Now, I made this little testing apparatus, and with this little apparatus I found out that using a certain length of resistant wire it worked for 42 hours under conditions such as—that is, making and breaking the circuit. The element, when the circuit would be closed, would heat up to an orange glow. The thermostatic metal would disengage the contacts and the current or circuit would be broken. Then while the heating element was losing its heat the thermostatic metal would go back to its normal position, producing another contact, and then the circuit would be closed. Thereby, the element again would become heated and the operation repeated like that, for 42 hours, which proved that that certain length of wire we placed into our element was satisfactory for regular use in our product.

Q. When did you first make up this testing unit?

A. Well, I made this up in June or July in 1929.

Q. What became of that, the original?

A. Well, the original was destroyed in the fire of that same year, in November. That was exactly about
328 two weeks before Thanksgiving Day.

Q. That was the date of the fire?

A. Well—

Q. How do you recall that date?

A. Well, I will tell you. It was a simple affair. That morning when I came down to work and found the plant destroyed by fire, I went back home around eleven o'clock and told mother, "Now we are going to have a swell Thanksgiving," and she said, "Why?" I said, "The plant is totally burnt down."

Q. This particular model, this replica that you have in your hands, did you make up that device?

A. Yes. The principle is the same, only it was on a longer testing board, and that is all.

Q. Please explain to the Court the operation of the device, pointing out the different parts in the circuit.

A. We have two terminal wires—

The Court: Hasn't that all been pointed out?

Mr. Huxley: I was going to suggest it was.

Mr. Schroeder: If your Honor understands it, I think it is sufficient.

The Court: I think it is all right.

Mr. Schroeder: It was not very clear, I am afraid, on the record, but I think that is sufficient. That is
329 all.

Mr. Huxley: No cross-examination.

330 Wednesday, March 22, 1939.
2:00 o'clock p m.

Court convened pursuant to recess.

Present:

Messrs. Wiles, Schroeder, Byrne, Huxley.

WILLIAM DRAKE, called as a witness on behalf of the defendant, having been first duly sworn, testified as follows:

Direct Examination by Mr. Schroeder.

Q. State your name, age, residence and occupation.

A. My name is William Drake. I live at 3047 North Monitor Avenue, Chicago. I am employed at present by Sinko Tool as an engineer.

Q. How long have you been with the Sinko Company?

A. Approximately seventeen years.

Q. I hand you Defendant's Exhibits H and I, which are photostats of these original drawings, and ask you if you have ever seen those before?

A. Yes, I have seen them.

Q. I also hand you Defendant's Exhibit J, and ask you if you have seen this device before?

331 A. Yes, sir.

Q. Please state as nearly as you can the date that you first saw those drawings and the circumstances.

A. Well, I was called into Mr. Sinko's office and he handed me this sketch. He wanted me to make a model to the dimensions and specifications on the sketch.

Q. Did he give you anything else besides the two sketches?

A. Well, he gave me this head.

The Court: Defendant's Exhibit what?

Mr. Schroeder: Q. Defendant's Exhibit J?

A. Yes.
Q. He gave you—
A. Just the head.
Q. Which is the plug part?
A. Yes.
Q. Did you discuss the constructions shown there on the drawing and just exactly what you were supposed to do?
A. Yes, sir.
Q. Did you proceed to modify the cigar lighter plug which he gave you to conform to the sketch he gave you?
Mr. Huxley: I object to that as leading. Let him tell what he did.
Mr. Schroeder: All right. Strike it out.
332 Q. What did you do after Mr. Sinko gave you these sketches and the plug?
A. I went about my work. I could not at that time immediately start on it, but at the first opportunity I started on it. It was sometime in October when I actually was working on it.
Q. Did anyone help you with that work?
A. Mr. Szanty did.
Q. In what respect did Mr. Szanty help you?
A. Well, he is an engineer, as far as building tools, what we do in the shop, and also whatever we build we get together and talk it over, how we are going to go about in producing this article. I was somewhat worried at the time because of my wife's condition.
Q. Do you recall the exact date that you finished this particular plug?
A. Yes, it was October 16th.
Q. How do you fix that date?
A. Well, it was just a week prior to the birth of my baby, which is the 23rd.
Q. The 23rd of October?
A. The 23rd of October, 1933.
Q. She was born on that date?
A. Yes, sir.
333 Q. Now state exactly what you did, or what you had to do to this plug that Mr. Sinko gave to you, after it was turned over to you on October 16th.
A. I took the front portion of the knob, unscrewed it and went about inserting a brass plug into the sliding member to fasten the plug on the inside that contacts with the thermostat.
Q. The sliding portion is the knob?

A. The metal, it is the metal knob inside.
Q. That slides inside the socket portion there?
A. That is right; yes, sir.
Q. What is that socket portion made of?
A. This socket portion is made out of bakelite.
Q. What did you do to that part of the plug?
A. I had to bore it to take the diameter of that spring.
Q. Was there a spring in the original lighter?
A. Well, there was a spring, but we could not use it, so I had to make another one.
Q. You put in another spring?
A. That is right.
Q. You say you re-bored that?
A. Yes, because it was a trifle larger in diameter.
Q. Do you recall any other changes that you made
334 in the plug at that time to conform to those drawings?
A. Well, I constructed the thermostat U-spring.
Q. How about the heating element portion, was anything done to that?
A. No, there was nothing done to that. It was handed to me this way.
Q. That is the same cup that you had on the original model?
A. This is our cup. This is a Sinko cup.
Q. By "cup" you mean that portion containing the heating element?
A. That is the Sinko shell, Sinko element and shell.
Q. Did you put that on there?
A. No, that was on there. Mr. Sinko handed that to me.
Q. That was on before you got the plug?
A. That is right.
Q. When the device was completed October 16, 1933, what did you do with it?
A. I usually tried it in Mr. Sinko's office as there are methods of trying it there with this transformer that he has on the window sill of his office, and him not being in that morning I was trying it, and Mr. Szanty had his
office in addition to Mr. Sinko, and he came in with
335 me and we were both trying it. When we lit it we called Mr. Periolat and we tried it in front of him too.
Q. State exactly what happened, how this test was conducted.
A. Well, we pushed this knob into the socket, which

was mounted on this transformer, and pressed this part in, this movable plug, pressed it in. It took quite a time to heat it, what I mean before it would jump out, but it heated it all right. We took it apart and altered the shape of that U thermostatic material to make it kick out sooner.

Q. Did you test this device anywhere else besides Mr. Sinko's office?

A. I tested it merely for different voltages. We had an assembling bench in the rear of the shop, which Joe Halmo was in charge of and he really set the transformer for me at different voltages while I was trying it.

Q. These adjustments that you made on the thermostat when were those made?

A. The adjustments were made on that Monday morning.

Q. The device was completed then October 16th?

A. That is right.

336 Q. What can you say about the operation of it on that particular day?

A. It worked very good.

Q. In describing the test there you said that you pushed the plug in. Did you have one of those socket members?

A. Well, yes, we had that bound on the board of the transformer.

Q. What did you mean when you said that you pushed the plug in?

A. This is what I call the plug (indicating).

Q. The entire unit?

A. That is right.

Q. Did that light the lighter?

A. When we pressed it in; yes.

Q. When you pressed what in?

A. This center portion jumped out after it was lit.

Q. What was the condition of the heating element when that jumped out?

A. It was a red glow.

Q. After those tests that were completed on the morning of October 16th, did you make any further tests on the device?

A. We made some tests in the afternoon when Mr.
337 Sinko come back. I went into his office and showed him the lighter and he tested it.

Q. What was the result of those tests?

A. About the same. It heated to a red glow.

Q. What date did you say your daughter was born?
A. On the 23rd of October.
Q. The year?
A. 1933.
Q. I hand you Defendant's Exhibit F, and ask you if you have ever seen a device of this character?
A. Yes, I have.
Q. Please state when you saw a device of that kind.
A. I seen it in this assembling room where Joe Halmo was working.
Q. Was he using the device?
A. He was using it; yes.
Q. Do you recall when that was?
A. That was sometime in '29.
Q. Referring again to Defendant's Exhibit J, I notice that the insulating portion of this is broken off at the end. Was it in that condition at the time of these tests on October 16, 1933?
A. No, sir.
Q. Please state the condition of it at that time.
338 A. Well, I chipped a portion of it out in boring it out on the bench later.
Q. What portion was it that you chipped out?
A. It was this portion that stuck into the front there, only that portion was hanging on it here, it was a part of this, and then inside, as I was boring it, the tool caught it and chipped out a piece of it. But still you could use it; it was just a piece of it chipped out.
Q. That metal portion there that contains the thermostat, how is that connected to the insulating portion, or how was it connected in October, 1933?
A. I don't get your question.
Q. This metal sleeve portion here at the present time has the end portion of that insulating sleeve sticking into it?
A. Yes.
Q. What sort of a connection did you have between the insulating member and the metal sleeve?
A. There was a mica washer and it screwed together.
Q. This metal sleeve screwed on to the insulating socket?
A. This bakelite was threaded and that sleeve was screwed on to it to hold it together.
339 Q. This threaded portion that is now broken off?
A. That is right; what is in there.
Q. But this metal unit was detachably mounted on that sleeve?

A. That is right.
Q. By means of screw threads?
A. That is right.
Q. I will ask you to examine Defendant's Exhibit H and tell us whether the screw threads you have just referred to show on that drawing?
A. Yes.
Q. Can you tell from looking at that drawing that the end portion was threaded on?
A. Yes.
Q. I notice on this Defendant's Exhibit J that the end portion of that movable plunger is open.
A. There was a glass insert in there, a transparent insert, but it was cracked, but I would say the biggest portion was in there in the knob, but a piece was cracked out.
Q. Was it cracked out at the time you were working on it and modified it?
A. Yes.
Mr. Schroeder: That is all.

340 *Cross-Examination by Mr. Byrne.*

Q. Mr. Drake, as I recall your testimony, it is that you finished this job by October 23, 1933; is that the fact?
A. No, I finished it by October 16, 1933.
Q. October 16th?
A. Yes, sir.
Q. On October 16th you made four or five tests, is that what you mean?
A. Yes; probably more, I cannot recollect.
Q. You do not remember how many tests you made?
A. No.
Q. But at any rate, your work was completed on that device at that time?
A. That is right.
Q. You did not do any further work on that after that time, did you?
A. No, sir.
Q. But you had a group around you and you ran those tests at that time?
A. That is right.
Q. Those tests were run in Mr. Sinko's office, was
341 that the place?
A. With the group, but I made some tests myself in Mr. Halmo's assembling room.

Q. Were the others present?
A. No.
Q. Who was present?
A. Myself and Joe Halmo.
Q. Just you two?
A. Yes.
Q. Was that test in Mr. Halmo's office made before you went into Mr. Sinko's office?
A. Not originally, but when Mr. Sinko come back, yes, but not when I tried it with Szanty. Mr. Szanty was first, and then after I got through testing it in Mr. Sinko's office I went in the back room.
Q. Was Mr. Szanty in Mr. Sinko's office when you first tested it?
A. Yes.
Q. You went to the other party, to the other man, whose name escapes me—
The Witness: Halmo.
Q. And when Mr. Sinko came back you made a further test in his office?
A. We made a further test in his office.
342 Q. From that day to this you have made no further tests?
A. No, sir.
Q. You have done no further work on the matter?
A. No, sir.
Q. Did you ever see the drawings, Defendant's Exhibits H and 1, from that time until the time you were preparing for your testimony here?
A. It was several months ago. Mr. Sinko called me in and asked me if I could recall the date of my test, and I says, "Yes, I can," because the date was very clear in my mind on account of those things that happened.
Q. My question was with regard to the drawings, if you please. I assume in the meantime, after you made up the device until Mr. Sinko talked to you a few months ago, you did not see the drawings in the meantime?
A. No, sir.
Q. You didn't know what became of them?
Q. No, sir; I turned them over to Mr. Sinko.
Q. Before you made your test in his office or after that?
A. After.
Q. From that time until a short while ago, when you prepared to come here to testify, you had not seen
343 them; is that the fact?
A. That is right.

Q. Can you, by taking this device in your hand, that is, Defendant's Exhibit J point out to me the course that the electric force took when you operated that device?

A. Well, the outer shell or the shell that holds the element is the live contact and the current flows through the shell to the stud and from the stud to the thermostatic material, through the spring to your metal plug and, in turn, to the ground, which is connected in the socket member.

Q. What metal plug do you refer to, if you please?

A. This one (indicating).

Q. You mean the sleeve on the igniting element, this bright part?

A. That is right. Yes, the bright part, this here (indicating).

Q. The bi-metal parts in this unit expand, do they not, under heat?

A. Yes.

Q. Didn't they come in contact with the spring you have in your fingers?

A. Comes in contact with the stud.

344 Q. Didn't it come in contact with the spring?

A. No.

Q. Of course, if it came in contact with the spring it would readily short circuit, would it not?

A. That is right.

Q. Is there any appreciable clearance between that spring and that bi-metal part?

A. Yes.

Q. Sufficiently so that you would not get a short circuit there?

A. Yes.

Q. That would be a commercial proposition, would it?

A. Yes.

Q. Bear in mind I am not a commercial man.

A. Of course, we did not exactly put out a cigar lighter just exactly like this, but the lighter worked perfectly to our satisfaction in tests, but whatever we would do to put it out commercially that would be up to Mr. Sinko, because Mr. Sinko would pass on it. I would make the sample and then he would criticise or accept it.

Q. Except for a test, you would not want to have a device like Defendant's Exhibit J, where those metal parts extend so close to the spring which you have in your

345 hand that is part of the device?

A. I do not consider that is very close.

Q. You do not consider it very close?
A. No.
Q. Of course, if the metal parts did expand and did contact, the spring, you would immediately have the destruction of the device, that is to say, you would have a short circuit?
A. Yes.
Q. There is one other little thing I think you mentioned toward the close of your direct examination, that this outside point member, this bright member, was screw-threaded on the inside?
A. That is right.
Q. This part here, what do you call that part?
A. The sleeve.
Q. That sleeve threaded down into there, is that the way you said?
A. We used bakelite back there on the outside and this has a thread on the inside.
Q. Did you examine Defendant's Exhibit J to see whether or not there are threads on the inside and outside of that bright sleeve?
A. Not now, but I did when Mr. Sinko gave it to me.
346 Q. That is your recollection?
A. Yes.
Q. So when you finished your work on October 16, 1933, so far as you were concerned, the matter was put aside?
A. That is right.
Q. It was not carried on in the plant from that time on?
A. Not as far as I know.
Q. You would know, wouldn't you, if it had been?
A. Not necessarily. I was just carrying out instructions to make a certain sample. Whatever is to be done about putting it on the market, that would be up to Mr. Sinko. I haven't that authority.
Q. I am not speaking about your authority. There are only a few men employed there, a comparative small number; it is not in the hundreds?
A. Yes, it is in the hundreds.
Q. You know all that is going on in the way of manufacture, don't you?
A. Practically, yes.
Q. And you do not know of this being in manufacture, do you?
A. No, sir.
Mr. Byrne: That's all.

374 *Redirect Examination by Mr. Schroeder.*

Q. Mr. Drake, are you perfectly familiar with the commercial lighter that Mr. Sinko is putting out at the present time?

A. Yes, sir.

Q. I will ask you to examine this drawing, which is Plaintiff's Exhibit 17, which we have agreed shows the defendant's device, and point out to the Court, if you will, the amount of clearance that is provided for the thermostat in this particular device as the matter of clearance that is provided for the thermostat to move.

A. The clearance, I am pointing to the clearance.

Q. The clearance between the orange thermostatic member and the yellow sleeve that is attached to the knob member?

A. That is right.

Q. Assuming that this thermostat was overheated and that it expanded out so it touched this sleeve, would that cause a short circuit?

A. It would.

Mr. Schroeder: That is all.

Mr. Byrne: That is all

348 PETER P. PERIOLAT, called as a witness on behalf of the defendant, having been first duly sworn, testified as follows:

Direct Examination by Mr. Schroeder.

Q. Will you state your name and give your address?

A. Peter P. Periolat, 6211 Patterson Avenue, Chicago.

Q. When did you first come to the Sinko Company?

A. Roughly, twelve years ago.

Q. What is your present position with the Sinko Company?

A. I am sales manager.

Q. What did you do during the period immediately preceding the time you came with the Sinko Company, which date was March, 1927, what were you doing before that?

A. I was in charge of the sales at Electric Safety Devices. We manufactured a plug.

Q. I hand you Defendant's Exhibit D, and ask you if you can state what this is?

A. That is the plug I sold while with this company.

Q. And prior to coming with the Sinko Company?
A. That is right.
Q. Can you state approximately how many of these 349 plugs were sold?
A. Oh, I don't remember exactly; ten thousand plus.
Q. I hand you Defendant's Exhibit J, and ask you if you have ever seen this?
A. Yes, I have.
Q. Can you state the date that you saw this device?
A. I know it was in '33, right close to the end of the World's Fair, which would put it about October or November, in around there.
Q. Can you state the circumstances or can you state how you happened to see this particular device or what was done with it in your presence?
A. Yes. This sample being tested in Mr. Sinko's office by William Drake, our engineer, and Mr. Drake called me into Mr. Sinko's office to view the device or cigar lighter, and he told me to watch it work, or words to that effect.
He pressed it into a socket that was mounted on a transformer connected with the lighting circuit and it popped out. It was very interesting for the reason that it had an automatic shut-off, as far as I was concerned from a sales angle. However, I was of the impression, in viewing the cigar lighter, that it was a competitive make, for I 350 realized and recognized the model as being manufactured by Cuno. On further investigation, Mr. Drake advised that it was a Sinko cigar lighter, automatic in its operation.
Q. Do you recall who was present at the time this unit was tested?
A. Mr. Szanty, the secretary and treasurer of the company, and, if I recall rightly, Mr. Paul Kaiser came in during the time of the test, the shop foreman.
Q. What were the results of those tests, what did you find out as a result of testing it out with this transformer?
A. I don't know what you mean. What do you mean by "results"?
Q. Well, did the device operate?
A. Yes, I mentioned before that it worked.
Q. What was the condition of the heating element after this knob popped out?
A. It had attained a satisfactory incandescence.
Mr. Schroeder: That is all.
Mr. Huxley: No cross-examination.

Mr. Schroeder: At this time we usually like to reoffer all of our exhibits numbered from A through O, with the exception of N. A good many of these exhibits have been further identified by the witnesses and I believe they
351 have all gone in without objection.

Mr. Huxley: I think I did make some objections on the record. I have no objection to a re-offer, subject to the same objections I made when they were first offered.

The Court: All right. They may go in, subject to the same objections.

Mr. Schroeder: That finishes our case.

Mr. Huxley: You have not finished with Mr. Ayotte. He was to bring in some drawings.

The Court: You want to recall him for further cross-examination?

Mr. Byrne: We do. There was a question as to some drawings.

J. R. AYOTTE, a witness on behalf of the defendant, having been previously sworn, was recalled for further examination.

Cross-Examination by Mr. Huxley.

Q. Did you bring along the drawings that were asked for in the conference with Mr. Cohen?

352 A. Yes, sir. Mr. Cohen can remember that drawing, probably.

Q. Is that all you showed to Mr. Cohen?

A. I have several here, one, two, three.

Q. When you saw Mr. Cohen you also saw Mr. Johnson, did you not?

A. Mr. Johnson; yes. It was Mr. Johnson I met in the first place. I received this from Mr. Cohen (handing paper to Mr. Huxley).

Q. You have just handed me a telegram, dated December 1, reading:

"Mr. Ayotte
2402 West Congress Street

"Call Mr. Cohen at the Congress Hotel between six and seven o'clock tonight, Room eighteen ten.

"Casco Products Company."

Then you went to the Congress Hotel?
A. That is right.
Q. Whom did you see first?
A. I saw Mr. Johnson.
Q. You saw Mr. Johnson first?
A. Yes, sir.
Q. Then what happened?
A. Then I had to wait until Cohen was through shaving, about ten or fifteen minutes, when he come out
353 after he was through shaving, when he saw this drawing. That was about all. We couldn't deal at all because Johnson was in a hurry. He wanted to go out. In the meantime, I was down there to have a meeting. We talked about ten or fifteen minutes.
Q. Was Mr. Johnson present during all the time you had your talk with Mr. Cohen?
A. Yes, sir.
Q. He was present all the time?
A. And also Mr. Cochrane. We talked about different matters, about old times, lighters and different things like that. I showed him some drawings.
Q. Whose room did you go to, Mr. Johnson's or Mr. Cohen's room, or what room?
A. 1810. First I called from down stairs at the desk, and he says, "Come right up."
Q. You saw Mr. Johnson?
A. I saw Mr. Johnson.
Q. Then you saw them both?
A. Then I saw them both afterwards, about ten or fifteen minutes afterwards.
Q. Those drawings you have produced are the ones that you showed to Mr. Cohen?
A. Some of them.
354 Q. Are those all the drawings that you showed to Mr. Cohen?
A. Are those all the drawings that I showed to Mr. Cohen?
Q. Yes.
A. I have a lot of drawings I can't show to anybody.
Q. Those are the ones you showed to him?
A. That is right.
Q. That is all you showed to him?
A. Yes, sir. I had a copy of the patent—
The Court: Never mind that.
Mr. Huxley: Q. The Mr. Cohen and the Mr. Johnson

you referred to are the two gentlemen sitting in the court room?

A. Yes, sir.

Mr. Byrne: Which is Mr. Johnson?

A. Sitting right over there. Mr. Johnson is over here and Mr. Cohen has on the gray suit.

Mr. Huxley: These drawings are marked for identification as Plaintiff's Exhibits 24, 25, 26, 27 and 28.

(The drawings were so marked.)

Q. Did you submit any other ideas to Mr. Cohen or Mr. Johnson besides this cigar lighter?

A. I believe we were talking about an automobile
355 wrench.

Q. Wrench, did you say?

A. That is right.

Mr. Huxley: That is all.

The Court: Any further redirect examination?

Mr. Schroeder: You are not offering these drawings?

Mr. Huxley: No, I have just marked them for identification.

Mr. Schroeder: No redirect, your Honor.

Defendant Rests.

Thereupon the plaintiff, further to maintain the issues on its behalf introduced the following evidence, to wit:

HERBERT E. MEAD, called as a witness on behalf of the plaintiff, having been first duly sworn, testified on rebuttal as follows:

Direct Examination by Mr. Byrne.

Q. Will you please state your full name, Mr. Mead?

A. Herbert E. Mead.

Q. Where do you reside?

356 A. Detroit.

Q. How old are you?

A. Forty-six.

Q. Will you state the nature of the business in which you are engaged at this time?

A. I am, at the present time, works manager for Bowen Products Corporation, of Detroit.

Q. At Detroit?

A. That is right.

Q. What is the nature of the business of Bowen Products Corporation?

A. Lubricating devices and commercial stampings, pressed metal.

Q. Are you the patentee of one of the patents in suit here, No. 1,736,544? I hand you a copy of that patent so you may have the principle in mind to which I refer.

A. Yes, I am the patentee.

Q. Where were you located at the time that you made the invention of your patent here in suit?

A. We had a little plant at 2152 East Larned, Detroit.

Q. What was the name under which the business was carried on, as you say, at 2152 Larned Street, in Detroit?

A. Well, it was first known as the Central Stamp-
357 ing Company, and afterwards became the S. T. Jessop Company.

Q. So at one time it was the Central Stamping Company?

A. Yes, sir.

A. And later on it was the S. T. Jessop Company; is that the fact?

A. That is right.

Q. Can you tell me approximately when you made the invention of your patent here in suit?

Mr. Wiles: That is objected to as asking for a conclusion.

The Court: What he claims is his invention.

Mr. Wiles: I don't mean that. He should state what he did and not when he made his invention.

The Court: All right.

Mr. Byrne: Q. You stated that you are the inventor of the patent in suit?

A. That is right.

Q. You signed the application papers for a patent thereon, did you not?

A. Yes, sir.

Q. Approximately when did you make the device which is shown in the patent here in suit?

A. You mean the first models?

Q. Yes.

358 A. I would say it was in the spring of 1926, somewhere around there.

Q. I hand you a paper and will ask you, please, to read it and state whether or not the handwriting thereon is your handwriting, and when you put that handwriting thereon?

A. That is my handwriting.

Q. Do you know when you put that on?

A. 1927, I signed it.
Q. On what date in 1927?
A. August 8th.
Q. All of the handwriting on this paper that I have tendered to you is in your handwriting?
A. That is right.
Q. That is your signature thereon?
A. That is right.
Q. And the date on which you made that is what?
A. August 8, 1927.
Q. That date is also in your handwriting?
A. It is.
Q. When was it put on, please?
A. It was put on at this date here.
Q. By "this date" you mean when?
A. August 8th.
359 Q. What year?
A. 1927.
Q. Now, Mr. Mead, tell me, after having read this paper to which I have brought your attention, whether or not the matters stated therein in your handwriting refresh your recollection in any manner with respect to the matter of your patent here involved, as to doing any of the things stated therein.
Mr. Wiles: If the Court please, I object to it in that form. He should exhaust his recollection first.
The Court: I think so.
Mr. Byrne: I agree with your Honor. Your Honor, we should have objected to their taking a shovel to expedite matters on the other side and testifying themselves instead of letting their witnesses do it.
Q. Will you please go on in your own way and tell me, as nearly as you can remember, when you made the device of the patent in suit, and what you did about making up a model?
A. Leading up to the model?
Mr. Byrne: That is right.
A. We were manufacturing a line of automobile accessories, horn buttons principally, and Mr. Jessop became financially interested in the company. I men-
360 tioned the fact that I had, among other products that I wanted to manufacture, a cigar lighter that would automatically turn off when the proper heat was reached. He asked me just exactly what it was and I outlined to him the features and he said, "Well, let's get busy and make up a model and get it patented," so I said, "All

right." I believe that was in the winter, I believe it was in January or February, 1926, I know it was awful cold and our old shop did not have very good heating facilities, and I had to work on it myself at nights and on Sundays because I had to take care of the maintenance during the day. It was just a small shop and my first model was a very crude affair. Unfortunately, the parts have been destroyed, but I do remember the testing device I made was still used when I left the company for testing finished lighters. It consisted of a sheet metal coupled with an ammeter with a clock and a six-volt storage battery on the bench.

361 And, of course, the first model I had to make the core of fiber, and that was adequate for a few tests, but it soon charred and burned up, and after I was satisfied that the model was practical I purchased some porcelain cores and started to put it out on a production basis.

Q. Did you make any sketches during the early stages of your work?

A. I did for my own information, yes.

Q. Do you know what became of those sketches?

A. I don't know what became of them, no. I don't have any in my possession.

Q. Have you been able to locate them?

A. No, I have not.

Q. Who, do you know besides Mr. Jessop had knowledge of your work and was told about it, who besides Mr. Jessop was told about it?

A. Well, Mr. Head who happened to be my partner at that time, and Mr. Dunsmore handled the sales and Mr. Johnson, who was Mr. Jessop's partner.

Q. Do you know Mr Head's first name?

A. Allen J., I believe.

Q. And do you know Mr. Johnson's first name?

A. Lynn.

362 Q. Mr. Lynn Johnson?

A. That's right.

Q. Did you show one of these devices to the parties to whom you have referred, Mr. Jessop, Mr. Johnson and Mr. Head?

A. I did.

Q. Where were you when you showed that device to the gentlemen named?

A. Well, of course, Mr. Head and Mr. Dunsmore were with me there at the plant and watching the progress as we went along.

Q. Did you give Mr. Dunsmore's first name?

A. His initials are A. J. I don't know his first name. They called him Jack.

Q. And all this up to now transpired at the plant at 2153 East Larned Street, Detroit, is that it?

A. Yes.

Q. You made up a model which you said had a fiber bushing, did you not?

A. That's right.

Q. Will you look on the patent here in suit, your patent, and point out to me the part thereon which corresponds to that part which you say was made of fiber?

363 Mr. Wiles: I object to that. There is no proof that is the structure of this thing. He made something in 1926 he says.

Mr. Byrne: I can't give way to the gentleman's light on the other side. I asked if there is a part that corresponds to it on that drawing.

The Court: I think I shall let him answer this question.

A. It was this part, the core, as I stated.

Mr. Byrne: Q. When you are pointing to this core you are referring to Fig. 11 on your patent drawing, is that it?

A. That's right.

Q. Can you describe, please, the device which you made up at Detroit at the early time when you were with the Central Stamping Company?

A. Can I describe it?

Q. Yes.

A. Well, I believe I can, the fundamentals of it anyhow. It was a round fiber base. The metal parts that held the contact point, I filed them up and bent them up in a vise, and the socket that holds the core also, then the contacts were fastened and made of bar stock. I made that on the lathe as well as the contact cup that holds

364 the resistance wire, and the socket that the knob went into was also made of bar stock turned on the lathe. We went down to the dime store, I believe, and found some stock Bakelite knobs, and I turned them on the lathe and on the bench, and it was a very crude looking affair, and the first ones I did not even put a case over the outside until I had gotten where I wanted in the way of mechanical movement.

Q. Will you be good enough to describe the contacts and the plug in your device?

A. The contacts from the heating element do you mean?

Q. That's right.

A. If I remember correctly the resistance wire was fastened to the outer shell, and I had a screw going down through the center, fastened to the other end of the resistance metal which drew it into a little square plug, one-eighth of an inch square, in the center of the core, and that in turn contacted the phosphor bronze bottom on the outside.

Q. Will you please state how the circuit was closed and how you operated the device, moved it in and off position?

A. This one-eighth inch square plug was turned to an angle and it engaged into a V-shaped slot in the con-
365 tact point as you revolved it to the right, and when the element reached the proper degree of heat it strengthened the coil in the bottom of the socket and the heat generated and reflected from that, lessened the tension on the outside contact, and the other coil on the bottom strengt.. ned and pulled it off the latch.

Q. What was the coil made of?

A. Thermostatic metal or bimetal.

Q. Bimetal. Now, Mr. Mead, will you please look at the two sheets of drawings in your patent and tell me whether or not the device which you made up at that time was generally the same as shown in the drawings of that patent as nearly as you can recall it?

A. As near as I can recall, yes. I know I experimented with the core on the outside of the socket as well as inside because I had considerable difficulty with the coils not being uniform, and I thought that the low temperature metal was the reason for that and I purchased some high temperature metal from the Chase Valve Company in Detroit. They had not been in that business so very long right at that time, but were making the products for a device of their own, as I understand.

Q. Is that the same firm that was mentioned here this morning when a young gentleman came on the stand
366 and testified about the uses that bimetal product can be put to?

A. That's right.

Q. So you have known of that concern for a considerable period of time, is that it?

A. Oh, yes.

Q. What became of that first model which you made and which you said had that fiber bushing?

A. I would not know. When I left the company it was there in a box with a lot of other stuff, and I just don't know what became of it.

Q. Tell me, please, about when did you leave the company, meaning the Central Stamping Company?

A. Well, it was known as the Jessop Company at that time.

Q. Yes.

A. It was in the fall of 1928 because I went with Bowen Products in June of 1929.

Mr. Byrne: I ask that this paper be marked for identification Plaintiff's Exhibit 29.

(Said paper was so marked.)

Q. The paper that I called to your attention a short while ago, and which is signed by you and which is dated August 9, 1927 has at the top, does it not, the
367 name Cromwell, Greist & Warden?

A. That's right.

Mr. Bryne: And you gentlemen on the other side will concede with me that they are patent counsel engaged in the practice here in Chicago?

Mr. Wiles: Oh, yes. They are a well known Chicago firm.

Mr. Bryne: Yes, and have been for a long period of time?

Mr. Wiles: Yes.

Mr. Bryne: Q. Now, do you know the occasion for making out this paper, Exhibit 29 for identification?

A. Yes. Mr. Jessop brought that down to Detroit with him on one of his trips.

Q. Now, will you please read this paper with me and state whether the statements contained therein, those that were filled in by you and which are in your handwriting refresh your recollection now as to the statements contained therein. First, on this sheet, Exhibit 29 for identification—

Mr. Wiles: If the Court please, I still say that is utterly incompetent. Here is a self-serving declaration not admissible by itself at all by any possibility.

The Court: You have not exhausted the recol-
368 lection of the witness?

Mr. Bryne: I believe so.

The Court: If this merely corroborates what he has

specified it is not admissible. If it is something he does not recall, and he has testified to all he can remember—

Mr. Bryne: Well, I asked him about when he made the statements. This is merely corroboration.

The Court: That is merely corroboration of his statement, for that purpose it is not admissible. If he had forgotten and could use it to refresh his recollection he might testify, but as long as he has testified to the same thing this is not admissible.

Mr. Bryne: Q. Can you tell me about when you made the first drawings of your invention, Mr. Mead?

A. The first drawings?

Q. Yes, or sketches, whatever they were.

A. It was in the early part of 1926.

Q. And can you tell me the nature of those drawings?

A. They were merely working sketches that I made up for my own purpose.

Q. As you worked on things mechanical did you make up sketches so that you would have them as a guide?

A. Oh, yes. That was absolutely necessary.

369. Q. Can you tell me about when your invention was disclosed to others? When you told anybody about it. When did you tell others about it?

A. I told Mr. Dunsmore and Mr. Head—

Mr. Wiles: I object to that form. He has to state—

The Court: I thought he had testified to conversations with Mr. Jessop.

Mr. Bryne: Yes.

The Court: And if that was the time of the disclosure, and if you want to date it, is that it?

Mr. Bryne: Q. Can you tell me about the time you had your talk with Mr. Jessop, Mr. Johnson and Mr. Head about your invention when you told them about it?

A. Well, it was in the early, I would say around January of 1926.

Q. Yes. Now, Mr. Mead, you made up you said a model of your device by hand?

A. That's right.

Q. And that had fiber bushing in it, didn't it?

A. That's right.

Q. And that bushing you said—what happened to that?

A. Well, it charred and deteriorated.

Q. Do you know where that model or device is that you made up by hand and which had that fiber bushing?

370 A. I have not the slightest idea.

Q. Do you know about when you made that device?

A. That device was made in the year of—either made in the latter part of 1926 or the first part of 1927. I know it was cold weather when I was working on it, I know that.

Q. Well now, at about what time was the business of the Central Stamping Company taken over by Mr. Jessop?

A. Well, that's quite a long and involved story.

Q. Can you give me the approximate time?

A. I can. He was financially interested in our company before he actually took the business over.

Q. Yes.

A. To the extent of financing us for tools and fixtures on various items that we were manufacturing for him.

Q. Yes.

A. And it was some time in 1927 that my partner, Mr. Dunsmore, advised Mr. Jessop that we could no longer carry on, so he suggested that he would purchase the assets of the company if we would stay on and run it. That was in 1927, the year of 1927.

Q. That's your recollection of it?

A. That's right.

Q. Well, were any of your other devices made up 371 after that time?

A. After what time?

Q. After the first model.

A. The lighter?

Q. Yes.

A. Oh yes, yes, a number of them.

Q. You personally made up others after that time?

A. Oh, yes.

Q. Did you ultimately get into the manufacture of the device?

A. Yes, we did.

Q. Can you give me some indication of about the time when you got into manufacture?

A. I think it was the latter part of 1927.

Q. And at that time Mr. Jessop was in charge of the business, is that the fact?

A. That's right.

Q. And that manufacture was carried on at the plant that had formerly been occupied by the Central Stamping Company, is that right?

A. Correct.

Q. And it was then being carried on by the Jessop concern?

A. That's right.

372 Q. Who had charge of the sales of the device which you then made up for the market, that is to say were they sold from Detroit?

A. We manufactured in Detroit only and shipped them to Chicago and maintained a warehouse here, and all sales were made at the Chicago office.

Q. And they were made by whom, if you please?

A. They were made by S. T. Jessop Company.

Q. I tender to you a paper, and will you please examine it and state whether or not you can identify it?

A. Yes. This is a trust mortgage.

Q. What is it, please?

A. A trust mortgage. Mr. Landy, I believe, was trustee under the mortgage.

Q. Were you familiar with the transaction which is covered by that paper which you have in your hand?

A. Yes, I was.

Q. You were interested in the Central Stamping Company at that time as a partner only?

A. Yes, that's right.

Q. And did you know about the transaction?

A. I did.

Q. And what is represented by the paper which you have in your hand?

373 A. It is a trust mortgage. Mr. Landy was appointed trustee.

Q. For Central Stamping Company?

A. For Central Stamping Company, to administer their affairs, and I believe they decided on a sale, a trust mortgage sale.

Q. What is the date of that document, if it has a date?

A. January 14, 1927.

Q. Is there a date above that date?

A. The 27th of December. Oh, the 27th of December, 1926.

Q. The date of that paper is December 27, 1926?

A. Yes.

Q. Did you know of the transaction which culminated in this paper that I tender to you?

A. Yes.

Mr. Bryne: I ask this paper be marked for identification Plaintiff's Exhibit 30.

(Said paper was marked for identification.)

Q. Now, can you tell me by reference to this Exhibit 30 for identification, which you stated is dated December 27,

1926, whether or not you made your model, the one that is not now findable, before or after that date?

374 A. That's a working model which was made right after this date.

Q. Right after that date?

A. Right after this date.

Q. And do you know about how long after that?

A. I would say within three months.

Q. Had you been working on parts of it before this date of December 27, 1926?

A. Oh, yes.

Q. And on your sketches?

A. Well, I could not do much because I had to do it in my spare time.

Q. Maybe I misunderstood. How about your first crude model of it, the one that was replaced by the porcelain part which had the fiber bushing on, was that the one made after this date, December 27, 1926?

A. It was made shortly after that date.

Q. I am tendering to you five sheets which contain written matter, and some sketches, and will ask you if you will examine them and state whether or not you can identify them.

A. Yes.

Q. Tell me, please, who did the writing which is contained thereon?

A. It is my handwriting.

375 Q. Please look at all of them.

A. These are my sketches. I don't know whose this is, in whose handwriting that is.

Q. You call my attention to the fact that a sheet on pink paper, on which two figures appear, are not in your handwriting?

A. Yes.

Q. I have withdrawn those.

A. This is mine. Yes, this is the description that I gave Mr. Jessop of the various details of the lighter for the patent attorney's information.

Q. And do you know about when you prepared the data which is contained on these six sheets?

A. I don't recall the exact date.

Q. Can you tell me approximately?

A. I imagine it was in 1927.

Q. Before the application was filed, do you suppose?

A. I imagine it must have been. That was for the patent attorney's information.

Q. And according to your best information now this data was prepared in the summer of 1927 before the application for patent was filed?

A. That's right.

Mr. Wiles: It has a date on it, has it not?

376 A. I think not.

Mr. Wiles: It is dated repeatedly.

Mr. Byrne: No, it is not.

Mr. Wiles: Two of them have a stamped date of August 7, 1927, on them.

The Court: Even though they bear dates I think the witness can testify to the actual date.

Mr. Wiles: Oh, yes.

The Court: Any date might be put on them.

Mr. Byrne: I offer in evidence the five sheets which the witness has testified contain descriptive matter and some sketches which he made in the summer of 1927, and ask that they be marked PLAINTIFF'S EXHIBIT 31.

The Court: They may be admitted.

(The exhibit was so marked.)

Mr. Byrne: Q. Now, Mr. Mead, I think you testified that shortly after December 27, 1926 you made your first full sized model of your device, is that right?

A. That's right.

Q. Now, will you please turn to this paper to which we have referred, which is signed by you August 9, 1927, and to the statement contained therein in response to the question: "Was a full sized model made and if so when?" and a date appears thereon April 30, 1926. Does that

377 tend to refresh your recollection as to when you made your first model of this device?

Mr. Wiles: It seems to me that's objectionable and entirely improper. The witness when examined here before stated this work was done within three months following the date of this sale, which was December 27, 1926, which would put it along to April 1927.

The Court: Is not that the date?

Mr. Huxley: This was written in 1927.

The Witness: It has been a long time ago and I have been away from the company, and in fact away from that line of work for ten years.

Mr. Huxley: It seems to me it is perfectly proper to let the witness refresh his recollection from a paper written at that time.

The Court: Sometimes a witness is refreshed as to a date, and some writing may refresh his recollection as to the date.

Mr. Huxley: As to the true date.

Mr. Wiles: At the time it was made it was wholly self-serving, and long after.

The Court: The document is not admissible, but the witness' attention may be called to the document he has executed and made at a time nearer when his recollec-
378 tion might be better.

Mr. Huxley: That's all we ask.

A. I had forgotten about this until the last few months.

Mr. Byrne: Will you read my question, please?

(The question was read as follows: "Now, will you please turn to this paper to which we have referred, which is signed by you August 9, 1927, and to the statement contained therein in response to the question: 'Was a full sized model made and if so when,' and a date appears thereon April 30, 1926. Does that tend to refresh your recollection as to when you made your first model of this device?")

Mr. Huxley: Show him the memorandum.

A. Yes, it does.

Mr. Wiles: I want it clear that the witness is now testifying from his present recollection and not from what is on a paper but what he now remembers independently of any paper at all.

The Court: This is asked you, if this refreshes your recollection so you know not from what is stated here but from your refreshed recollection so you can state?

379 A. I was trying to recall some incident that would knit together a definite date there. I know that I mentioned to Mr. Jessop and to Mr. Johnson the fact that I had a device in mind, and they suggested that I get to work on it immediately. That was I know in very cold weather. It was around the first of the year, and I immediately started to work on it. Whether that was 1927 or 1926 or 1925 right now it would be very hard for me to say. I would have to go back and get some correspondence out to know just when I went to the Central Stamping Company, and the date that Jessop became financially interested in it, and the date on which I left, but I do recall this when Mr. Jessop asked me to fill this out for the patent attorney.

Mr. Byrne: Q. This is, you mean Exhibit 29 for identification?

A. That's correct. I remember filling that out, and I told him that I was going to put on the absolute actual date, if anything favor it to you.

Mr. Wiles: I object to that.

Mr. Byrne: Q. Does that paper, Exhibit 29, now refresh your recollection with respect to when you made your first model, or does it not?

A. It does. It must have been in 1926.

380 Mr. Wiles: Q. Was that a conclusion or do you actually remember it now as being 1926?

A. Well, I remember it now as being 1926, yes.

Mr. Wiles: You did not remember that way when you began to testify. You remembered it as 1927.

A. I remember I made the device in 1927 it was.

Mr. Byrne: Q. Mr. Jessop I think you said took over the Central Stamping Company before December 27, 1926, which is the date of the paper, Exhibit 30, did you not?

A. Yes.

Q. He took it over at that time?

A. He took it over in December 1926 according to that paper there.

Q. Well, according to the paper, but you said in fact he had taken it over, came to you before that time?

A. Yes, he had invested money in the company to the extent of buying tools and dies.

Q. The device was marketed after that time, was it not?

A. It was.

Q. Will you look at the sheet which I tender to you and state whether or not you can identify that?

A. Yes. I wrote the instructions.

Q. And what do the instructions relate to?

A. They relate to the operation and care and main-
381 tenance of the light.

Q. Of the lighter that you have devised, is that it?

A. That's right.

Q. Do you know about when that leaflet was put out?

A. Well, that must have been in the latter part of 1927.

Q. That's what you believe it to be anyway?

A. Yes.

Q. But it is a paper you had to deal with about that time and it does relate to the cigar lighter which you devised?

A. That's right.

Mr. Byrne: I offer in evidence that paper last identified by the witness as PLAINTIFF'S EXHIBIT 32.

The Court: It may be admitted.

(The exhibit was so marked.)

Mr. Byrne: Q. Have you here one of the devices which you did make up at some time or another?

A. Yes. That device right there is the first model that I made that I would care to submit to anybody.

Q. And is that a model which has been in your possession since it was made?

A. That's correct.

Q. And you got it out comparatively recently?

382 A. I took it home to keep for sentimental reasons. I had it laying around the house and last fall my wife was going to throw it out and I salvaged it.

Q. Tell me, is that a machine made device or a hand made device?

A. It is a machine made device, that is, the parts are machined.

Q. Yes.

A. But this knob is one that I afterwards put on after I got my Bakelite part made, but this part of the device here (pointing).

Q. When you say "this part of the device" please designate it so we will have a record that will mean something.

A. I don't know what you would call it. It is the mechanical part of the device was manufactured by hand.

Q. By that you mean the part which appears here in brass or copper?

A. That's correct. Every part in its was manufactured, machined by hand. In other words, I mean I did not have production tools.

Q. At the time you made this?

A. That's right.

Q. And this particular device has been in your pos-

383 session ever since it was made?

A. That's right.

Q. Can you give me an approximation of the time when you made this particular device?

A. It was a long time ago.

Q. It was a long time ago?

A. But that device there was one that was submitted to General Motors for their approval and Mr. Fisher and Harry Earl had a lot of fun playing with it, and that was back—I believe that was in the fall of 1927 that I made that device, that model there, rather.

Mr. Byrne: I offer in evidence the device identified by the witness and ask that it be marked PLAINTIFF'S EXHIBIT 33.

The Court: It may be admitted.

(The exhibit was so marked.)

Mr. Byrne: Q. Mr. Mead, I am tendering to you some papers which have come to my attention, some of which are on the letter paper of Central Stamping Company, and I will ask you to examine particularly the first few sheets

and state whether or not you are familiar with them and whether or not they help you in any way to fix the time when you made your first model.

(Sheets of paper handed to Mr. Wiles who examines same.)

384 Mr. Wiles: I cannot tell what this means.

A. These are invoices where we invoiced Mr. Jessop the tools I mentioned a short time ago where he financed the tools on this two-in-one button, which was a new device we were putting on the market at that time, and that gave us the necessary working capital to put the product out, incidentally under his trade-mark.

Mr. Byrne: Q. You say you put out what product?

A. This two-in-one-horn button. That was in August 1926.

The Court: Q. How is that related to this model?

A. Well, we manufactured a line of horn buttons and cheap accessories principally for the Model T Ford, as I had several ideas which were new at that time, but I did not have the finances to manufacture them, and I disclosed that to Mr. Jessop and he said he would furnish the necessary funds to do the job if we would give him exclusive sales rights.

The Court: Q. But what does that have to do with this model?

A. This cigar lighter, your Honor?

The Court: Q. Yes.

A. Well, it was at that time, it was in 1926 that Mr. Jessop became financially interested in the company
385 to that point where I had confidence enough to disclose the cigar lighter to him.

Mr. Byrne: Q. Did you do so by that time?

A. I did.

Q. And "by that time" what time do you refer to?

A. It was prior to this.

Q. And "prior to this" means what?

A. August 6th here.

Q. What year?

A. 1926. He said, I remember now, that that would be the next item that we would manufacture, if we did. We concentrated our efforts on the cigar lighter.

Q. And had you built a model by the date that you refer to, that is to say, does this paper tend to refresh your recollection as to whether you had your model by the date of August, 1926?

A. That was invoices for tools that had already been made.

Q. For what purpose?
A. For the two-in-one lighter.
Mr. Wiles: Two-in-one horn button you said.
The Witness: That's correct, but because the tools would have to be made before we could build them for them.
The Court: Q. Is the two-in-one button related to
386 the lighter?
A. Only in so far as it refreshes my memory to the extent that we must have had the tools even by August for the two-in-one button, which would leave me available to work on the cigar lighter.
Mr. Byrne: Q. It does not give you when you had your tools ready for—
A. The cigar lighter?
Q. Yes, or even for your model?
A. I did not make any tools for the model.
Q. But you had tools you could make the lighter with, is that it?
A. Not until the following year.
Mr. Byrne: I ask that this bill be marked for identification, consisting of two sheets, Plaintiff's Exhibit 34.
The Court: It may be admitted.
(The exhibit was so marked.)
Mr. Byrne: You may cross-examine, Mr. Wiles.

387 *Cross-Examination by Mr. Wiles.*

Q. Now, I want to get just as clear as I can from this last testimony. Some time before August, 1926, not long before, Jessop became interested in the company, is that right?
A. You said Jessop became interested in the company just before August, 1926?
Q. You said he financed these tools that are shown in the last exhibit.
A. Mr. Jessop was our sales representative, he was at the time that I went with the company as an employee, and that was in 1922 or 1923. Mr. Moyers owned the company at that time.
Q. Well, you said it was about the time of these last invoices that you looked at, August, 1926 that Jessop put some money in?
A. That's correct.
Q. And it was at that time that you got confidence

enough in Jessop's interest in the business to tell him about this lighter, or just about that time?

A. Perhaps it would be better if I gave you a little more of the history of the company.

Q. I wonder if you can't answer my question.

388 That's what I thought you said.

A. That's correct. I did say that.

Q. So it was about August, or a little before August of 1926 that you told Jessop about this?

A. No. It was the fore part of 1926.

Q. Well I am trying to get at the hook-up of these last invoices that you looked at which you said refreshed your recollection?

A. That's so.

Q. As I understood the state of your memory then, it was that it was about the time that Jessop put his money in?

A. It was that time that he actually put the money in, although he agreed to put the money in before that time.

Q. Well, as I understood it was a short time before that he agreed to put some money in?

A. That's correct.

Q. And it was after that agreement, that is just about August, or a little bit before, that you told Jessop about the new idea on the lighter?

A. Yes. It was before August that I told him about the lighter.

Q. Well, not very long before.

389 A. It was in cold weather I told him. I remember very well coming back from the restaurant across the street and it was very very cold, Mr. Johnson, Mr. Jessop and myself.

Q. You put it much earlier in 1926 than August that you told Jessop about it?

A. Yes, I did tell him about it earlier than August, 1926.

Q. Now, before you came here to testify you went all over this with Mr. Huxley and Mr. Byrne, didn't you, to refresh your recollection as well as you could?

A. Not to any great extent. I did not know anything about the case until a week ago.

Q. But I mean after you came here you consulted them about it and talked about what your testimony was going to be, didn't you?

A. They merely asked me to look at some of the papers and see if I recollected any of them, and the date.

Q. Yes. And they asked you to produce these papers, didn't they?

A. What papers?

Q. Didn't you have anything to do with the producing of these papers?

A. I did not have any of these papers.

390 Q. They had them when you came here?

A. That's right.

Q. Well now, this bill of sale by the trustee was gone over by you before you came here, was it not?

A. I merely scanned it over night before last I believe it was.

Q. You looked that over and talked to Mr. Byrne about it, didn't you?

A. He asked me if I knew about it and I said I did.

Q. And you came here prepared to testify, did you not, that that did assist in fixing your recollection?

A. Well, I have been trying to set the definite dates, and it does help me to recall the definite dates, yes.

Q. But when this sheet was produced, which is Exhibit 30, and you looked at it and said that it did refresh your recollection, and you then said that the first model was made within three months after that date, didn't you?

A. I believe I did; yes.

Q. And that was then your best recollection, was it not? When you testified to it you testified, of course, according to your best judgment at the time, didn't you?

A. Yes.

Q. And you also told Mr. Byrne that when you
391 went over this bill of sale with him, didn't you, the other night?

A. Perhaps I did. I don't recall whether I did.

Q. Well, it had something to do with your memory at that time. That's why Mr. Byrne brought it here, was it not, that you had told him it helped you refresh your recollection?

A. I assume so; yes.

Q. And you told him what you have said here about it, didn't you?

A. Yes.

Q. Of course, when you told him a couple of days ago, the other night—whenever it was, you then thought you were telling him just as far as you were able to remember, didn't you?

A. I did.

Q. Certainly. Now, on this matter of commercial manufacture, for how long a time was this on the market?

A. I left the company in the fall of 1928, I know that definitely, and they were manufacturing them after I left. How long I don't know.

Q. Not very long?

A. I don't imagine so, but I started the job in production and sent away the first or second shipments, I recall that.

392 Q. Shipments of how many?

A. I cannot tell you the exact quantity. We shipped them to Chicago.

Q. Well, a few hundred or a few thousand or a few score?

A. I imagine it was in the neighborhood of, possibly, a total of four or five hundred.

Q. So far as you know that's all that were ever sold?

A. No. In talking to my partner after that Mr. Head advised me that they sold quite a quantity of them.

Q. What do you mean by "quite a quantity"?

A. He mentioned that they sold a thousand because they had purchased one lot of a thousand Bakelite knobs, and they were entirely used up.

Q. And at some time or other, not very long after you left the thing failed, didn't it, as a commercial proposition?

A. I don't know what happened. I know they went out of business.

Q. They did go out of business?

A. Yes.

Q. Not very long after you left?

A. Within a year I imagine.

Q. And nobody revived this lighter for years?

393 A. I lost all track of it.

Q. You have never seen one on the market aside from the thousand or so that were made in the beginning?

A. No.

Q. And you never heard of one having been made later?

A. Well, outside of the following year what few there were.

Q. Yes. Now, as to the date when this actual commercial manufacture began, I think you stated 1927, late 1927?

A. I believe that is correct; yes.

Q. Now, I notice there are directions here on this Exhibit 32, and by the way it was in connection with Exhibit 32 that you fixed the date of publication as 1927, was it not?

A. What is Exhibit 32?

Q. That's the direction sheet.

A. That has no date on it.

Q. I know, but you said that must have been in 1927, did you not?

A. Yes.

Q. Well now, that contains directions for installing on the model A Ford, does it not?

A. I don't know whether it specifiec model A or all models.

394 Q. Well, look at it.

A. (Witness examines document.) We made two different models at that time, a clamp on model and this model here.

Q. You are not answering my question.

A. I was leading up to it, or trying.

Q. The sheet, Exhibit 32, does contain directions for installing on the model A Ford, does it not?

A. That's right.

Q. You know as a matter of fact that the model A Ford didn't come out until 1928, don't you? Is not that your impresion? I am frank to say I am giving it from recollection.

A. I don't know I am sure just what year the model A did come out.

Q. What makes you say that this particular Exhibit 32 must have been published in 1927?

A. Because I left the company in 1928.

Q. What time of the year?

A. I believe it was in September.

Q. Of 1928?

A. That's right.

Q. Well, this might have been published then any time up to September, 1928, might it not?

395 A. I was positive that I wrote the instructions myself.

Q. Well, you could have written them any time prior to September, 1928, could you not?

A. Yes, but we were in production on the model for a year before I left the company.

Q. What I was getting at was, the thing you testified

about positively was that this particular sheet was published in 1927?

A. Well, obviously you make your instruction sheet as soon as you have made your first product.

Q. Was that the only instructions you ever published?

A. No. There was instructions on the box.

Q. I mean did you have any other edition? Did you have an edition that did not contain these directions for installing on the model A Ford?

A. What was that?

Q. Did you have an edition or issue of those direction sheets that did not have the model A directions on it?

A. I am not sure unless it was instructions on the carton.

Mr. Wiles: I believe that is all.

The Court: Any redirect?

Mr. Byrne: Just one question, your Honor please.

396 *Redirect Examination by Mr. Byrne.*

Q. Have you any connection with the plaintiff company in this suit, the Automatic Devices Company?

A. No, I have not.

397 ADAM JOHN DUNSMORE, called as a witness on behalf of the plaintiff, having been first duly sworn, testified in rebuttal as follows:

Direct Examination by Mr. Byrne.

Q. Will you please give your full name, Mr. Dunsmore?

A. Adam John Dunsmore.

Q. Where do you reside?

A. The Carlton Hotel in Oak Park.

Q. Chicago, Illinois?

A. No, Oak Park. That is a suburb west.

Q. Are you employed by a Chicago organization?

A. Chicago Rivet & Machine Company.

Q. For how long a period of time have you been employed by that concern?

A. Ten years, in round figures.

Q. What is the nature of the business that is carried on by that organization?

A. Manufacture of tubular and split rivets and automatic setting machines pertaining to the use of those rivets.

Q. Were you ever employed by Central Stamping Company in Detroit, or did you have any connection with that organization?

398 A. It is a little difficult to define as employed. Actually, the business was originally owned by a man named Moyers. Mr. Mead was superintendent. Subsequently Mr. Mead and another man named A. J. Head took over the business. It was discovered it was in very, very bad condition financially, and they asked me to come in in an effort to pull it out. So that I was not actually a partner in the business at that stage. I was only contributing whatever knowledge or skill I might have in sales, and so forth, in an effort to pull the thing out for these two men.

Q. Can you tell me about when you took up this association with Central Stamping Company?

A. It is a little difficult to put my finger on that. I would say probably somewhere in 1925.

Q In the year 1925?

A. I imagine along about late 1925, but that is merely a guess.

Q. For how long a period of time did you remain with this organization?

A. Well, I was there until it was finally sold under a trust mortgage.

Q. Will you please examine the paper which I tender to you, which has been marked Plaintiff's Exhibit 30
399 for identification, and state whether or not you know what that paper is?

A. I presume this records the sale of the assets of the company to Mr. Jessop.

Q. Will you please look at the last page of that?

A. Do you mean the signatures?

Q. Yes. Does that refresh your recollection? I mean, after having looked the whole through, is that a culmination of the sale or transfer to Jessop about which you have spoken?

A. That is correct. I arranged for this trust mortgage. When the company seemed to have reached the end of its rope I arranged the trust mortgage, and I think I even recall Mr. Lantry's signature.

Q. At any rate, you know of the association of Mr. Lantry with this enterprise at that itme?

A. Yes.
Q. As trustee?
A. Yes, correct.
Mr. Byrne: I offer in evidence that document which was formerly marked PLAINTIFF'S EXHIBIT 30 for identification.
The Court: It will be admitted.
(The exhibit was so marked.)
400 Mr. Byrne: Q. Now, you mentioned Mr. Mead connected with the Central Stamping Company. Do you refer to the Mr. Mead who was on the witness stand just before you?
A. The previous witness, yes.
Q. While with the Central Stamping Company were you familiar with whatever was made there?
A. Very very much.
Q. You sold some of the products, did you not?
A. I think I directly—that is, I was responsible for the sale of it all through its manufacturers' agents, of whom Mr. Jessop is referred to as one.
Q. Mr. Jessop, at that time of Chicago?
A. Correct.
Q. Did you ever know anything about a cigar lighter which was developed by Mr. Mead?
A. Yes.
Q. Did you see him engage in the making of one of the models or one of the devices?
A. I not only saw him engaged in the making of one of them, but I saw him engaged in the making of a number of consecutive models, and I probably held a few of the parts for him at the time.
Q. In other words, you collaborated with him in whatever he was attempting to do in that connection?
401 A. Well, mechanics is not my forte. I am more concerned with sales, and the same was true at that time.
Q. Can you give me a general description of the device which you worked on with Mr. Mead?
A. I couldn't give you a technical description.
Q. I want just a general description of it.
A. I heard, of course, Mr. Mead's testimony, and substantially, you know, that is my recollection of it. He started off with a piece of fiber and a cup, and he had a square member running through which he engaged in a hook on the end of this thermostatic metal. That is about it. I really don't know.

Q. Would you say a thermostatic metal was used in that device?

A. Yes. I had to go out and find it for him, I think, or at least I probably did some phoning, whatever it was.

Q. Was a device made up while you were there with the company?

A. Let me say first, please, that I also remained there after the property was sold to the S. T. Jessop Company. I also remained there for a period of months after that, as a matter of fact a year, representing S. T. Jessop Company not only in the products of this activity with which I have been identified but also other items
402 which Mr. Jessop was also representative for. I covered Michigan, Ohio and Indiana. For a period of a few months after Mr. Jessop acquired the property I handled most of the office routine between Detroit and Chicago, as well as making the outside calls, so that I hope in that way to give you the answer to my being identified prior to and after his acquiring the property.

Q. Can you, with respect to the time that Mr. Jessop took over the company, the Central Stamping Company, state whether or not a model of Mr. Mead's device was made by that time, so far as you know?

A. May I correctly understand that? Do you mean, did he make a model prior to Jessop's acquiring the property under sale?

Q. That is right.

A. To the best of my belief he made the model. That probably was some time prior to that. I could not be specific on dates. I have no date. Some time previous, I would say, he monkeyed with the thing, maybe, arbitrarily, five or six months.

Q. That was probably five or six months before the time of the sale to Mr. Jessop?

A. That is correct. That is when he was just playing with it.

403 Q. After Mr. Jessop took possession of that organization by this document of December 27, 1926, you remained there for a considerable period, as you stated?

A. Yes, as a sales representative, and only contributing sort of a contact in an office way.

Q. Were you there at a time when they began manufacturing one of these Mead cigar lighters?

A. In a capacity, yes; outside representative.

Q. You knew that they did eventually get one of the devices upon the market?

A. Oh, yes, yes.

Q. Do you know why they discontinued? Were you there at the time they discontinued the manufacture of this cigar lighter?

A. No. They were still, as far as I recall, making it at the time I entered the employ of my present connection.

Q. When you entered your present connection, or rather when you left that old association down in Detroit, was it a strong concern financially or was it comparatively weak?

A. Humorously weak.

Q. Humorously weak?

A. Yes.

404 Q. It did cost money at that time to carry on the manufacture, did it?

A. Correct.

Q. Did you see whether or not the device, which you believe was made before the sale to Mr. Jessop in December, which is evidenced by this paper of December 27, 1926, worked satisfactorily? That is to say, did it operate?

A. Well, it operated. There was something remaining to be done, I would say in the heat-treating, as I recall the story, of the thermostatic metal. I personally presented this model and the battery and stand that Mr. Mead referred to, myself, to the Fisher Body Company. There were a number of models prior to that.

Q. That was Exhibit 33?

A. Yes, that is the one I toted around.

Q. You took that to Fisher Body Company?

A. Fisher Body Company.

Q. In Detroit?

A. In Detroit.

Q. Did you operate that device for the Fisher Body people?

A. Yes, but as I say, because of a seeming variation due to the fact that the thermostatic springs, as Mr.
405 Mead had explained it to me at the time, because of being hand made, had a certain variation, it might run five hundred times and operate perfectly, and about the time I got it up to Mr. Fisher, or somebody, that was the time it would not repeat quickly enough.

Q. In other words, it was a little slow in operating?

A. Well, after it had been used repeatedly a number of times. These gentlemen, of course, are impatient and they would sit there and play with it a while and it might not work. It did not seem to have a tendency to cool.

Q. But, given a chance, it would? It just would not snap right back?

A. Given a chance, it would work without any trouble.

Q. Do you remember about the time you took it to the Fisher people? Was it after Mr. Jessop took over the concern?

A. Yes.

Q. Do you know approximately when it was you took it to the Fisher concern?

A. As a guess, probably along the summer or fall of that first year he had control, which, I believe, was 1927.

Mr. Byrne: That is all.

Mr. Wiles: No cross-examination.

406 GEORGE W. JOHNSON, called as a witness on behalf of the plaintiff, having been first duly sworn, testified in rebuttal as follows:

Direct Examination by Mr. Byrne.

Q. Will you please state your full name, Mr. Johnson?

A. My name is George W. Johnson.

Q. Where do you live?

A. At 5809 North Kilbourn Avenue, in Chicago.

Q. With what concern are you associated or a part?

A. I am in the United States Tent & Awning Company.

Q. What is the nature of the business of that concern?

A. Well, we are exposition, circus and carnival outfitters.

Q. You make some tents for that purpose?

A. Yes, indeed.

Q. Is Mr. S. T. Jessop associated with that company?

A. He is the president of the United States Tent & Awning Company.

Q. What is your office?

A. I am the vice president of the company.

Q. How long have you been in your present association with the company and with Mr. Jessop?

A. The United States Tent & Awning Company
407 since January 2, 1930.

Q. Prior to that time were you associated with Mr. Jessop?

A. Yes, for a number of years prior to that time.

Q. What was the nature of the business that was carried on prior to that time by Mr. Jessop and you?

A. We were manufacturers' representatives, particularly in the automotive accessory line.

Q. Were you operating principally here in Chicago?

A. We maintained an office in Chicago at 219 West Chicago Avenue, and a warehouse.

Q. Do you know Mr. Mead who was on the witness stand here this afternoon?

A. I know Mr. Mead.

Q. In what connection did you meet Mr. Mead?

A. In connection with a visit to the Central Stamping Company some time in 1925 or 1926.

Q. The Central Stamping Company to which you refer was located in what city, please?

A. They were located in Detroit, Michigan.

Q. What was that concern doing and what association did it have, if any, with Mr. Jessop at that time?

A. Mr. Jessop at that time represented them. He was a sales agent for the Central Stamping Company, 408 who produced automobile accessories.

Q. What if anything do you recall regarding a cigar lighter that the Central Stamping Company was working upon at about that time, or at any time?

A. At any time?

Q. Yes. I mean a thermostatic lighter, if they had one.

A. Well, I have a recollection of the S. T. Jessop Company manufacturing it. I have a recollection of my having sold some of them.

Q. Yes. Well, did you have any contact with Mr. Mead or anyone else down at the place of the Central Stamping Company at Detroit with respect to this device?

A. Yes. Yes, definitely.

Q. Well, now, did Mr. Jessop at any time take over the Central Stamping Company?

A. He did, sir.

Q. Can you identify the paper which has been marked Plaintiff's Exhibit 30?

A. I do, sir.

Q. Were you familiar with that at that time?

A. I was, sir.

Q. Pursuant to that paper di' Mr. Jessop take over the assets of the Central Stamping Company?

409 A. I didn't get the question.

Q. I say, under that paper did Mr. Jessop take over the assets of the Central Stamping Company?

A. He did, sir.

Q. Now, was it prior to the execution and delivery of that paper, Plaintiff's Exhibit 30, that you learned about this cigar lighter from Mr. Mead or others at the Central Stamping Company?

A. Oh, definitely prior to that.

Q. Will you tell me, please, what you knew about the device prior to that time, which is December 27, 1926?

A. I recall a number of models that I might see in my monthly visits to Detroit, at the Central Stamping Company. As I would make my monthly visits, in the interest of getting merchandise out of there so that we might deliver the goods that we had sold, from time to time, Mead would show me the developments as he was playing around with the various parts and pieces he had around there.

Q. Did you see at that time that device or part of a device (indicating), and by that I am referring to this cigar lighter?

A. Well, I have a recollection of Mr. Mead's work bench, and like all inventors' personal benches it was
410 cluttered up with a lot of wires and gadgets and knobs and brass parts, and a storage battery, and the like, and some heating elements.

Q. Did you see a completed device or a partly completed device? That is, did you see a cigar lighter on Mr. Mead's bench while you were at Central Stamping Company, at Detroit, at any time prior to December 27, 1926?

A. Yes, I did.

Q. What was the state or condition of that device? That is to say, was it completed or partially completed, or what?

A. I wouldn't say—it was not a completed device, in that it was nothing that you might offer as a piece of merchandise for sale.

Q. Well, what was it, a hand made device or what?

Mr. Wiles: Let him testify to it. Just ask him to describe it.

Mr. Byrne: Don't worry.

The Witness: I didn't get the question.

The Court: Go ahead.

Mr. Byrne: Q. I will ask it again. Will you tell me what the condition of that device was? How was it made, so far as you know?

A. I couldn't describe that to you, other than
411 Mead's and Head's explanation as to how it worked.

Q. Did you see it operate?

A. I did operate it.

Q. You did operate it. Did the unit heat up so that you could light a cigar or cigarette with it?

Mr. Wiles: I object to that kind of examination.

The Court: Describe it.

The Witness: The device was a heating element on the end of a plug, and you turned it in a clockwise manner and it remained in that position, and later there was a snapping noise and it apparently moved. The lighting device or the heating element was incandescent, and you could light a cigarette with it or char a piece of paper with it.

Mr. Byrne: Q. After this period of December 27, 1936, did you have to do with the sale of this device?

A. I did, sir.

Q. Will you please look at the paper which has been marked Exhibit 32 and state whether or not you know what that is?

A. Without reading it word for word it is an instruction for the installation of an Automatch lighter.

Q. Was that used in connection with the sale of this device?

412 A. This was inserted in the container in which the device was packaged.

Q. Can you tell me whether or not this is a package in which the lighter was packaged?

A. Yes, that is definite. That is correct, and I know where it was made. It was made by the Randolph Box & Label Company in Chicago.

Mr. Byrne: I offer in evidence the package, the carton, identified by the witness, and ask that it be marked PLAINTIFF'S EXHIBIT 35.

The Court: It may be received.

(The exhibit was so marked.)

Mr. Byrne: Q. Now, did you succeed in making any sales of the cigar lighter to, say, Montgomery Ward & Company?

A. Yes, sir.

Q. Was this lighter carried in the catalog of Montgomery Ward & Company, do you know?

A. Yes. It was assigned a stock number. I think that the automotive division or part of Montgomery Ward is

division 61, and the preface number would be 61- some other number.

Q. Will you please turn to this photostatic copy of a page from the Montgomery Ward & Company catalog,
413 page 653, and state whether or not this cigar lighter is illustrated there and referred to?

A. Yes, it is. It is item 61C6731. That is Ward's catalog number.

Q. Will you please glance at that page, 653, and particularly with respect to the written matter under the cut of this device, and state whether or not it is indicated that it is for a Ford automobile?

The Court: I think I can see that, without his testimony.

Mr. Byrne: All right, your Honor. Have you any objection to my offering a photostatic copy?

Mr. Huxley: No. That is covered by stipulation.

Mr. Byrne: I offer in evidence the front page and page 653 of the Montgomery Ward & Company catalog No. 109, covering the period for the fall and winter 1928 and 1929, with the consent of my good friends on the other side.

Mr. Schroeder: That is PLAINTIFF'S EXHIBIT 36.

The Court: It may be admitted.

(The exhibit was so marked.)

Mr. Byrne: Q. Now, you please examine cursorily, if any examination is required, the device which I tender to you, and state where that has been?

414 A. That has been in the office, or rather the personal safe of Mr. Jessop.

Q. Have you seen it there from time to time?

A. I have from time to time. He and I, I should say, share that fire safe jointly, and this has been in his possession all that time at 701 North Sangamon Street in Chicago. That is, since 1930.

Q. You have seen it there from time to time?

A. I have.

Q. What was the purpose of having it made up in this fashion, mounted like this?

A. My recollection is that it was one of the first models, one of the first working models that Mead turned out, and he wanted to make a desk set of it, and an ash-tray device and lighter.

Q. At any rate, this particular device has been in your office here in Chicago for a large number of years? Since about when?

A. It has been at the Saugamon Street address since 1930, and prior to that at 219 West Chicago Avenue.

Q. That dates back to, did you say 1931, or earlier?

A. No. We occupied the premises at 219 West Chicago Avenue up to January, 1930.

Q. Can you give me an approximation of about the
415 number of the devices exemplified by these devices which are here as exhibits, which were sold by your company?

A. Only approximate.

Q. Can you give me an approximation?

A. Possibly fifteen hundred or two thousand.

Q. Do you know why Mr. Jessop discontinued the manufacture of the device?

A. Yes, I can explain that to you, probably at a little length.

Q. Well, all right.

A. The previous testimony which I have heard here is correct, and that is that it was a struggling company. Let me explain that the S. T. Jessop Company as manufacturers' agents, represented a number of manufacturers in the automotive line, among them being the Central Stamping Company, and the Central Stamping Company got into difficulties. We had some of the products of Central Stamping Company cataloged with such concerns as the Western Auto Supply Company, Montgomery Ward, and Guarantee Tire & Rubber Company, and when the Central Stamping Company failed to deliver the goods that we had sold, it was up to the sales representatives to protect
416 our good name with the customers, inasmuch as we were selling them other products. That was the reason for Mr. Jessop's putting money into the company, primarily to satisfy and to fill orders that he had sold in good faith, and then later buying the company outright.

Having been sales agents for a number of years in the automotive line, and the automotive line going through a series of growing pains, where we would be rich one year and thin the next, we were looking for a different type of business, a business with more stability and something where we were directly concerned with the manufacture of articles. That is the reason he and I acquired the United States Tent & Awning Company, which is a rather large company. We couldn't give any more of our time to this Jesco Products Company and what was left of the old Central Stamping Company, so we decided that we would get rid of it. In other words, that company that we

became interested in was so much greater and larger that we thought we could not devote our time to both, and we just sold out.

Q. When Mr. Jessop took over the Central Stamping Company the name under which they carried on the manufacture down there was changed?

A. Yes.

Q. To what, please? Jesco Products Company?

417 A. It was the Jesco Products Manufacturing Company.

Q. Now, just to satisfy myself on one point before I stop, I believe you have testified that it was before December 27, 1926, that you had contact with Mr. Mead there in Detroit?

A. Yes, sir.

Q. And that you knew about his device before that time?

A. Yes, sir.

Q. And that you operated one of his devices on his work bench before that time?

A. Correct.

Mr. Byrne: I offer in evidence the lighter which the witness testified has been at his office for a considerable period of time, and will ask that it be marked PLAINTIFF'S EXHIBIT 37.

The Court: It will be admitted.

(The exhibit was so marked.)

Mr. Byrne: That is all.

Cross-Examination by Mr. Wiles.

Q. Are you able to say that this device came on the market earlier than 1928?

A. I don't believe so, no. No, sir.

418 Q. Mr. Mead testified that that direction slip, I believe it is Exhibit 32, this thing (indicating), was published in 1927. Now, that could not have been until 1928, could it?

A. I don't believe so. I don't believe so, no, sir, for the reason that the printing was handled out of the Chicago office and then we shipped to Detroit and they were packaged over there.

Q. Isn't it your recollection that the Model A Ford did not come out until that year, 1928?

A. Well, I have a recollection of getting thin waiting for Ford to bring out a new model, and that directly af-

fected our business over there. As to the year, I am not definite, sir, whether it was 1927 or 1928. But among the other items we manufactured were contrivances and accessories for the Ford car, and the Ford Motor Company was shut down for possibly a period of six months, or possibly a year, before they got into production on the new car. I am not definite as to what year, sir.

Q. This Montgomery Ward catalog is the winter of 1928-1929. Did you get a cataloging by them about as early as it came out?

A. I beg your pardon?

Q. Did you get Montgomery Ward to take it up
419 about as soon as it came out?

A. To accept it and list it, sir?

Q. Yes.

A. I don't believe so. All of my experience in selling Montgomery Ward is that the devices are submitted to some department for approval and for testing, and on other items it has been a period of possibly a year or a year and a half or two years before we are able to sell them. I refer now to that horn button device and that two-in-one button.

Q. Well, if that was cataloged in the fall of 1928 they must have had it about the spring of 1928 to go over it.

A. I would say yes, they would need at least six months to work on it in order to get it in the book.

Q. So they must have started investigation very quickly after you began to manufacture it?

A. Very likely, yes. It would be the first source we would go to to try to get a volume sale.

Q. Now, when this Jesco Products—let me put it this way. You decided it was better to liquidate that company and devote yourself to something else, is that correct?

A. That is correct. There was not sufficient income
420 from the business to warrant our neglecting the affairs of the United States Tent & Awning Company. In short, we could not be both in Chicago and Detroit, so we decided to sell and we just sold all of the machinery and equipment and disposed of the business. We did carry, however, in Chicago stock some of the items that we had manufactured, and shipped them to the various accounts until such time as the stocks were exhausted.

Q. The people who bought on your liquidation did not want to go ahead with this manufacture?

A. The liquidation was in the form of merely disposing of the machinery to an individual who, I believe, took it to

Wichita, Kansas, and installed it in a factory down there, the various lathes.

Q. For making something else?

A. Making something else, yes.

Q. There was not a sufficient sale of this thing to justify somebody else in wanting to go ahead with it as a business?

A. I beg your pardon?

Q. There was not any such sale of this Mead lighter as would justify anybody else wanting to go ahead with it as a business?

A. Well, that is hard to answer. This all happened
421 in 1930 and everything was tumbling around our heads, and there was a condition at that time where nobody knew what the market would be and nobody knew what the future would hold. Our decision to dispose of that Detroit plant was caused by what happened in the fall of 1929 when the market crashed, and at that time we thought we would get rid of the thing. So, to answer the question as to the sale, I have reason to believe that had the item been properly advertised and displayed, and had money been spent on sales promotion, the item would have continued to sell.

Q. Well, you had real good business for the first year that you had this?

A. I wouldn't say good business from the standpoint of the volume.

Q. Well, I mean business conditions were good up to the fall of 1929. The biggest boom we had was on from the fall of 1928 to the fall of 1929.

A. Excepting, sir, let me enumerate the items that we made in Detroit: namely, a horn button that was for the Ford automobile Model T, a two-in-one horn button which was made for the Model T, ash-trays which were made for the Ford car. Then Mr. Ford in 1927 or 1928, I don't know,
decided to discontinue the manufacture of that Model
422 T, and as a consequence the market and the demand fell off for these specialties that we were making for that Model T Ford.

Q. I understand, that naturally would, but this cigar lighter thing had nothing to do with the Ford Model T, particularly? It would go on any car, wouldn't it?

A. To answer your question, there was not sufficient volume at the time on the lighter to warrant our continuing to put more money in that Detroit thing.

Q. That would have been true for anybody. The volume was not there then.

The Court: I think that is argument.

Mr. Wiles: I am asking him. He knows the sales.

The Court: He says there was not sufficient for him. I don't know how he can answer for anybody else.

Mr. Wiles: All right, that is all.

Mr. Byrne: I have one question.

Redirect Examination by Mr. Byrne.

Q. Mr. Johnson, have you any connection with the plaintiff company in this case, the Automatic Devices Corporation?

A. No, I have no connection.

423 Q. Where is Mr. Jessop today, if you know?

A. Mr. Jessop is at his home.

Q. He is ill, is he not, today?

A. Yes.

Q. Probably will be available tomorrow morning?

A. I spoke to his wife this noon. She said very likely he would be at his office tomorrow.

Q. Have you any connection with the Casco Products Corporation?

A. None whatsoever.

Mr. Byrne: That is all.

I would like to ask Mr. Mead one question. That may be done, with your Honor's permission, from where he is.

HERBERT E. MEAD, resumed the stand for further examination:

Direct Examination by Mr. Byrne.

Q. Mr. Mead, where is Mr. A. J. Head now?

A. He is home ill.

Q. He has been ill for a considerable period of time, five or six weeks?

A. No, he has not been down to work for about eight weeks.

424 Q. He has not been to work for about eight weeks?

A. That is right. He has a very bad bronchial condition.

Q. A bad bronchial condition?

A. That is right.

Q. He was at home when you left to come up here?

A. That is right.

Mr. Byrne: That is all. Thank you.

We desire to call Mr. Jessop, if we can. He is lying home ill, but he will be very short in the morning. I think we have two witnesses who will be very short after that.

The Court: You cannot use them this afternoon?

Mr. Byrne: I don't know. Maybe we can.

Mr. Huxley: May I confer with counsel for a moment?

The Court: Yes. I will want to adjourn promptly at five o'clock.

(Whereupon a recess was taken.)

The Court: You were speaking about Mr. Jessop. I was wondering, if it is merely corroborative and is not going to be controverted—

Mr. Wiles: I don't know what he will testify to. Mr. Byrne, can you say what Mr. Jessop will testify to? Maybe we can stipulate.

425 The Court: If it is merely corroborative, if it is not going to be controverted, the original testimony is in.

Mr. Byrne: This is off the record.

(A discussion was had off the record.)

Mr. Wiles: I think you better call him.

Mr. Byrne: It will be very, very short.

JOSEPH H. COHEN, resumed the stand for further examination:

Direct Examination by Mr. Huxley.

Q. Mr. Cohen, you are the same Mr. Cohen who has testified previously in this case, are you not?

A. Yes, I am.

Q. On or about the 2nd of December, 1938, did you have a meeting with Mr. Ayotte, who has testified here today?

A. I did.

Q. Will you tell us about that meeting?

A. Our sales manager, Mr. Cochrane, vice president of our company, telephoned me and said this man, Mr. Ayotte, would like to see me, and he had been to our plant once before, about a year ago, and that meeting a year ago
426 resulted in nothing. However, I thought I would see him since he was rather persistent about it, and I arranged to see him. Unfortunately I did not get in the exact time and he didn't know where I was located, so we tried the next day and we finally met. He came up to my room. I invited him up, since he phoned, and he came up and I immediately notified Mr. Johnson, because he was aware

of the fact that he was coming, and if he had something that we were interested in we would be glad to know it and buy it from him.

I remember very clearly his disclosing to us the two drawings that were placed before me and in evidence here.

Q. I am handing you Defendant's Exhibits H and I, photostats of them.

A. I clearly remember seeing these drawings. I had gone over them and pointed out certain drawings that I shall never forget, with Mr. Johnson, and particularly criticised the contour of this heating element shell which is used and was introduced as late as 1936 for the Oldsmobile car. I particularly remember I had called Mr. Johnson's attention to this thermostat and asked if any of our patents covered this particular construction, and Mr. Johnson replied that he had a Chinese copy of this very struc-
427 ture. That is a very common term used in patents.

Q. Just identify the figures and where they are.

A. This dark outline thermostat, which is so characteristic of one that I had been working with for some time, it made me laugh when he was trying to sell us something that we had done so long before.

However, Ayotte went on and talked about being the greatest inventor in the world and having invented the radio tube, and we began wondering how we were going to get him out of the room without causing him to become violent. We were afraid of offending him in an attempt to say something that might disprove some of these gigantic statements that he was making. So I spoke with Mr. Johnson privately for a few seconds and I said, "Well, just tell him you will call him tomorrow. Don't tell him we are not interested, but just get him out of here, if you can." And that is exactly what happened. We got rid of him, and then we had a few laughs, to be truthful with you, about some of the things that he had shown us and the claims that he had made for them.

Q. You pointed out a certain dark colored thermostatic element on one of these drawings. Was that the one
428 on Defendant's Exhibit I, the figure in the upper left-hand portion of that drawing?

A. The dark part of the drawing is the thermostat, these two little hook shaped things that represent the thermostat. That, of course, being the important part having to do with the so-called invention, I turned to Mr. Johnson and I said, "Well, have you a construction covered as disclosed in this

drawing?" He said, "I have a Chinese copy of it which we have."

Q. That is the one you referred to, that drawing?

A. Yes.

Q. I am handing you Defendant's Exhibit H. Do you recall any particular figures on that drawing, and if so point them out and tell where they are located on the drawing.

A. I saw all of this business (indicating), which I was a little interested in. My own interest and the very thing that Mr. Johnson and I discussed was this heating element, which I have previously stated.

The Court: Is there a figure there? Let it be marked with a figure on the exhibit so that it may be identified.

Mr. Wiles: Here is a red pencil to mark with, if you wish.

429 Mr. Huxley: Will you mark the figure that you are referring to with a red pencil? Mark it in red. Put the letter "A" there.

A. I will indicate with an arrow. What notation, if any, shall I make?

Q. Just put a large "A".

A. Well, in this drawing—

The Court: I think it is sufficiently identified.

The Witness: In this drawing here, this particular thing that we discussed as vital, shall I mark that one?

Mr. Huxley: Q. Mark that "B".

A. I will put the arrow in.

Q. That has to do with the one showing the thermostat, is that right?

A. This one here (indicating).

Q. Yes.

A. "B". That has to do with the thermostat.

Mr. Huxley: Now, we didn't mark the exhibit, as a matter of fact.

The Court: You can mark that afterwards.

Mr. Huxley: Q. Will you mark that particular one?

A. There is this member here (indicating).

Q. All right. Now, I am showing you certain draw-
430 ings marked for identification as Plaintiff's Exhibits 24, 25, 26, 27 and 28, which were produced by Mr. Ayotte. Will you examine those and state whether or not any of those were shown to you at this conference?

A. None of these were shown. I remember distinctly there were just two drawings, in all, and those were the only ones we had presented to us, and we saw no others. That is

very definite and so clearly in my mind that there is not any question about it.

Q. I am showing you the original drawings of Defendant's Exhibits H and I. Will you look at those and state whether or not—those are the two original exhibits of Defendant's Exhibits H and I. With those originals before you, will you comment on those?

A. I saw and discussed, as I have already stated, the drawing as shown here, particularly this heating element here, because of its being exactly as they make the one for Oldsmobile. It was rather amusing to us to think that Ayotte, we figured, had copied a Sinko lighter in producing this, and it was really laughable. We also stressed this, all of the talk at the time having to do with this thermostat. All of these other parts on here meant nothing because they were piece parts and they were so irregular and meaningless we paid no attention to them.

431 Mr. Huxley: That is all.

Cross-Examination by Mr. Wiles.

Q. Let me get your position first. These same identical original pieces of paper you say you saw in Ayotte's possession?

A. When you say "identical", I wouldn't say that. I merely—

The Court: Apparently they are?

The Witness: Apparently.

Mr. Wiles: Q. Were the figures on them and the dates?

A. To be truthful, there was a lot of scribbling which I paid no attention to. It was such an awkward drawing, save for those two little structures that were important to us, that is all I remember concentrating on. There was a lot of scribbling and sketches, just as I see them here before me.

Q. Then you are unable to say whether the drawings you saw are the same ones that are here, or some other ones?

A. If I had to say, I would say they were. That would be my best guess.

432 Q. That was in December, December 2, 1938?

A. I wouldn't be sure as to the exact date. I can corroborate it by my hotel register and the telegrams. Having no way of reaching Ayotte, and since I missed him the night before, we asked our office to send a telegram to Ayotte, all of which happened. He admits visiting with me and he can substantiate that he was there.

Mr. Huxley: It was in December, 1938.

The Witness: It was during the trial.

Mr. Wiles: Q. Well, it was during the trial?

A. It was during the trial when we were here in the other case.

Mr. Wiles: That is all.

ARTHUR A. JOHNSON, resumed the stand for further examination:

Direct Examination by Mr. Huxley.

Q. You are the same Mr. Arthur A. Johnson that has testified previously in this case, are you not?

A. Yes, sir.

Q. Do you remember seeing Mr. Ayotte at the Congress Hotel in the early part of December, 1938?

433 A. Yes, sir. It was on a Friday, the first Friday in December. It was, I think, the day we closed the other trial.

Q. Will you please tell what happened at that conference and who was there?

A. Well, to start out, I was in my room in the evening expecting a call from Mr. Cohen, because I understood that they had wired Mr. Ayotte. I got a call from Mr. Cohen's room to my room. Mr. Cohen asked me to come up, and he said that Mr. Ayotte was there then. I got up into Mr. Cohen's room, and Mr. Cohen and Mr. Ayotte were discussing some inventions, or alleged inventions, of Mr. Ayotte, and I remember Mr. Ayotte showing us both together a sheet of drawing. I can't remember whether it was one sheet or two sheets of drawing, but that sheet of drawing had these figures on it, substantially (indicating).

Q. Wait a minute. Just identify those. You mark them.

A. The figure marked "A", and a figure marked—

Q. Put it "C".

A. "C".

Q. On Defendant's Exhibit H?

A. Exhibit H. The reason I remember these two 434 pictures, I don't say that they are line for line with this, but I took away with me a picture of something I saw. I remember distinctly this heating element that Mr. Cohen just referred to a few minutes ago, with the

rounded side wall, which is like Exhibit 8-A in the other case. I also remember, it may have been this one I marked "C" or the one I marked "B"—they are practically the same—or that Mr. Cohen marked "B". They are practically the same except that "B" is a little better drawing, but I remember seeing a picture where, inside the uniting unit there is a pair of hooked arms that came up from the plate, and that plate was fastened onto the heating element, because I had filed an application for that idea in 1936, and it struck me so forcibly that here the bimetallic contact should be fastened to the heating element instead of the other arrangement, like in this picture here, Figure "A" where the bimetallic members were fastened to the knob.

Q. Mr. Johnson, I am handing you Plaintiff's Exhibits 24, 25, 26, 27 and 28, which have been marked for identification. Will you look at those and state whether Mr. Ayotte showed you any of those drawings?

A. Of course I looked at these when they were put in as exhibits before, and I have absolutely no recollection of having seen any of these drawings at all. I know
435 he was talking about some kind of a wrench, to start with, and he wound up talking about investing the radio vacuum tube.

Q. What representations, or what did he say, if anything? When these drawings were shown you, why did he show them to you?

A. Well, he represented that—

Q. What did he say?

A. The drawing that I saw that had figures like "A" and "B", or "A" and "C", he represented to me that was his invention and he wanted to sell us, to sell Mr. Cohen and me, the drawings and the invention. He wanted to sell the drawings. That was the thing that he had in mind, that we might find some use for the drawings. I imagine he had—well, I imagined at the time he exhibited them that he wanted to sell the invention too, but the main point was to try to help us against Mr. Sinko. That is the impression I got from the whole conversation.

Mr. Huxley: That is all.

436 *Cross-Examination by Mr. Wiles.*

Q. When you saw these drawings Ayotte produced early in December, were they these original drawings that are here, of which the photostats are in evidence?

A. I have been trying to think and trying to recall to my mind that particular point, since these drawings were put in yesterday, and I could not unequivocally say that they are.

Q. You are not as positive about it as Mr. Cohen?

A. Well, Mr. Cohen was with Ayotte for—

The Court: I think that is argument, whether he is as positive about it as Mr. Cohen.

Mr Wiles: All right.

Q. When you looked at these drawings did you see Mr. Sinko's name on them and the dates?

A. Which drawings?

Q. The drawings that Ayotte showed you?

A. No, I don't remember seeing any signature of Mr. Sinko or any dates.

Q. You would have seen it, you would have noticed it if it had been there, wouldn't you?

A. I should think so. I have no recollection. I
437 should remember the kind of paper it was drawn on too, but I can't place it. I just can't remember.

Q. Well, by December, 1938, of course, the defendant's actual lighter was on the market?

A. That is correct, yes, sir.

Q. So that as far as these drawings are concerned, unless they are accompanied with some early proofs, they don't really mean anything to anybody, do they?

A. They did to me because of the arrangement of this bimetallic member.

Q. That is substantially what is shown in the defendant's device of today, is it not?

A. It is substantially what is shown in my pending application too.

Mr. Wiles: Just a minute. I move to strike that.

The Court: That may be stricken.

The Witness: Well, I can't answer that, your Honor, until I look at them a little closer. I wouldn't say that was substantially defendant's commercial device, no.

Mr. Wiles: Q. It differs only in proportions, does it not?

A. In proportions and construction.

Q. It had the bimetallic arrangement?

438 A. The idea of having a bimetallic clasping arm that goes over a collar button stud is there, and that is in defendant's device.

Mr. Wiles: That is all.

The Court: It is five o'clock.

Mr. Huxley: I want to state as to Plaintiff's Exhibits 24, 25, 26, 27 and 28, which were produced by Mr. Ayotte and which I marked for identification, I see no necessity for introducing those in evidence so I will return them to Mr. Ayotte unless defendant's counsel have any use for them.

Mr. Wiles: We don't want them. I would like to ask Mr. Schroeder a question. Is your case through with the exception of Mr. Jessop?

Mr. Huxley: Yes.

Mr. Wiles: I would like to call Mr. Schroeder. It won't take a minute.

The Court: All right.

Thereupon the defendant further to maintain the issues on its behalf introduced the following evidence, to-wit:

439 BERNARD A. SCHROEDER, called as a witness on behalf of the defendant, having been first duly sworn, testified in surrebuttal as follows:

Direct Examination by Mr. Wiles.

Mr. Byrne: Mr. Schroeder withdraws as counsel when he takes the witness stand?

Mr. Wiles: Not when he is testifying to a matter of his duties as counsel.

Q. Mr. Schroeder, please state your full name.

A. Bernard A. Schroeder.

Q. You are a member of the firm of—

A. Chritton, Wiles, Davies, Hirschl & Dawson.

Q. Defendant's counsel here?

A. Yes, sir.

Q. Now, take the original drawings corresponding to Defendant's Exhibits H and I and tell the Court when those first came into your possession as counsel for the defendant in these matters?

A. Well, an interference was suggested by the patent office in August last summer.

Mr. Byrne: Is that responsive, if your Honor
440 please? He can give a date. That calls for a date.

Mr. Wiles: Q. Tell the circumstances that fix the date.

A. Well, I requested that Mr. Sinko make a search through his files and find whatever drawings he could that showed that this particular invention, and to my best

recollection it was in September that Mr. Sinko brought these drawings to me, along with about fifteen other sketches which I have.

Mr. Byrne: 1938, was that, Mr. Schroeder?

The Witness: 1938. These drawings have been in my possession right straight through to the present date, and to the best of my recollection they have not been out of our office except in two instances when I went out and visited the Sinko plant and took these drawings with me to discuss the testimony with these witnesses that we have called. These drawings when they were turned over to me in September had Mr. Sinko's signature on here. They were dated and they have not been changed in any respect since that time.

Mr. Wiles: Q. And they were in your possession during the period when—

The Court: That is your argument. He testified they have not been out of his possession.

441 Mr. Byrne: From September, 1938?

Mr. Wiles: Yes. That is all.

Mr. Huxley: That is all.

Mr. Byrne: That is contrary to his own witness' testimony, which was the last two or three months.

The Court: You have just one short witness in the morning. You have no more, Mr. Wiles?

Mr. Wiles: No more, assuming Jessop is on that one matter.

Mr. Byrne: That is all there is, as far as we know.

The Court: We will adjourn at this time.

Whereupon an adjournment was taken until Thursday, March 23, 1939, at 10:15 A. M.

442 Thursday, March 23, 1939

10:15 o'clock A. M.

Court convened pursuant to adjournment

Present: Messrs. Huxley,
Byrne,
Wiles,
Schroeder,
Chrition.

Mr. Huxley: If the Court please, I will offer in evidence as PLAINTIFF'S EXHIBIT 38 the so-called instantaneous lighter which was referred to by Mr. Sinko

in connection with his examination and which as I understand it was offered to the trade in 1937. Is that correct?

Mr. Schroeder: That is correct.

Mr. Huxley: But was not sold in any commercial quantities?

Mr. Schroeder: There were none of them sold at all.

Mr. Huxley: It is offered in evidence.

The Court: It may be admitted.

(The exhibit was so marked.)

Mr. Huxley: The way this works is that there is a coil of resistance wire in the removable plug to which
443 the current goes, and which heats up very rapidly. It is a short coil making what you might call a dead short circuit almost, and then when that has been heated up to a certain extent there is a thermostatic element in the holding device which moves and switches the current over so that the current, in part at least, passes through another coil in the base to prevent overheating of the coil in the plug member.

Have I stated the action substantially correctly?

Mr. Schroeder: Yes. All the current passes through both coils when the thermostat opens. The thermostat is merely a safety device in the socket member that cuts more resistance into the circuit to cut down the amount of current flowing through the heating element on the plug.

Mr. Huxley: This is called an instantaneous lighter because when you push the holder in and hold it it becomes hot enough to light a cigar in a matter of two or three seconds.

Is not that right?

Mr. Schroeder: Yes.

Mr. Huxley: I also want to offer in evidence a copy of the Cohen patent 2,117,703, which is the original pat-
444 ent, of which the patent in suit is a division. We have a stipulation that the drawings and specification of the patents are the same in the patents and in the application as filed.

Mr. Wiles: I don't think we have looked at this file. Was the specification of this the same actually?

Mr. Huxley: Now, Mr. Wiles, I cannot answer that question, but whatever the fact is I will agree to this, that if there was in fact any change in the specification or drawings it may be included in this record in accordance with what the facts are.

The Court: All right.

Mr. Wiles: Fine.

Mr. Huxley: That's Plaintiff's Exhibit 39.

The Court: It may be admitted.

(The exhibit was so marked.)

Mr. Wiles: We can check it with his file history and stipulate the facts.

445 Mr. Wiles: I understand, and I believe Mr. Huxley does, that all of the plaintiff's automatic lighters shown in this chart, the blue and red chart, are of the type produced by Mr. Cohen and offered in evidence.

Mr. Huxley: Well, it is Plaintiff's Exhibit 3.

Mr. Wiles: Plaintiff's Exhibit 3. Is that the plaintiff's lighter?

Mr. Huxley: That's the plaintiff's lighter.

446 Mr. Wiles: Yes. And it is agreed that they are all of that type, subject to correction if Mr. Huxley finds it is wrong. His client is not here this morning.

Mr. Huxley: That is my understanding, except for some informal part like the handle, but that is my understanding and unless it is corrected it will so stand.

(A discussion was had off the record.)

The Court: The testimony, then, in this case is closed except for the deposition.

449 In the District Court of the United States.

For the Northern District of Illinois

Eastern Division.

The Automatic Devices Corporation, *Plaintiff*, *vs.* Sinko Tool and Manufacturing Company, *Defendant.*	In Equity No. 16,188.

Deposition taken on behalf of the plaintiff, pursuant to order of court, at 5733 Kenmore Avenue, Chicago, Illinois, on Thursday, March 23, 1939, at 3:00 o'clock, P. M., before Alice M. Rankin, a Notary Public in and for Cook County, Illinois.

Present: Thomas J. Bryne, Esquire, representing the plaintiff;

Russell Wiles, Esquire, and Bernard A. Schroeder, Esquire, representing the defendant.

Whereupon the following proceedings were had:

450 SIDNEY THOMAS JESSOP, called as a witness on behalf of the plaintiff, having been first duly sworn, testified as follows:

Direct Examination by Mr. Byrne.

Q. 1. Will you please give your full name?
A. Sidney Thomas Jessop.
Q. 2. Where do you reside?
A. No. 5733 Kenmore Avenue.
Q. 3. Chicago, Illinois?
A. Chicago, Illinois, County of Cook.
Q. 4. Are you in business at Chicago?
A. I am.
Q. 5. What is your business?
A. I am president of the United States Tent & Awning Company.
Q. 6. Where is your place of business located?
A. 701 North Sangamon Street, Chicago, Illinois.
Q. 7. Did you ever have any dealings or control or ownership of Central Stamping Company, of Detroit, Michigan, and if so, please state what it was.
A. Central Stamping Company was a predecessor of the Company which I bought at a trustee's sale in
451 1926. I believe there is a certificate of the original trustee's bill of sale which is an exhibit here.
Q. 8. Will you please look at the paper which I now tender you, and state whether or not that is the paper to which you referred?
A. Yes.
Q. 9. The paper which I now tender you is one that was heretofore marked Plaintiff's Exhibit 30. Is that document dated?
A. This document I had in my possession, in my private safe, and has been there ever since the date of the sale, ever since the sale was made, this and others. It is dated the 27th of December, 1926.
Q. 10. Pursuant to that bill of sale you acquired the effects of that company, Central Stamping Company?
A. That is correct.
Q. 11. Did you carry on the business of Central Stamping Company after December 27, 1926?
A. Only for a few days, and changed it over to the Jesco Products Manufacturing Company, that being a

trade name we had on certain products we were making or having made to sell in the automotive field.

Q. 12. Did you know a man by the name of Herbert E. Mead while you were associated with the Central
452 Stamping Company?

A. I did.

Q. 13. By the way, prior to December 27, 1926, had you had contact with the Central Stamping Company?

A. Many times.

Q. 14. What was the nature of that contact?

A. They were manufacturing items for us, in fact, they were items that were listed in certain catalogues and which we were bound in duty to deliver, such as the two-in-one horn button and other items. They made the tools and dies for us, the Central Stamping Company, and then continued to manufacture these items for us.

Q. 15. Did you have a business at Chicago at this early time prior to December 27, 1926?

A. In Chicago, yes, sir; S. T. Jessop Company.

Q. 16. What was the nature of the business conducted by this company?

A. Manufacturer, as well as agent, for the automotive field.

Q. 17. Did you ever have any contact or learn about a cigar lighter that Mr. Mead worked on?

A. Yes, sir.

Q. 18. Will you please state in your own way what you know about that?

453 A. Well, in the course of manufacturing these items it required our making trips to Detroit several times and on one of those particular trips the subject of the cigar lighter was broached by Mr. Mead to the effect of, How would we like to have a lighter that would snap on and off automatically, so that one would not have to press the lighter on the dash into contact and would still leave his hands free on the wheel? I at that time did not believe anything like that could happen, but Mr. Mead seemed so serious in his contention that it could be made, we told him to go ahead and make one and let us see the model.

Q. 19. Did you see the model?

A. Later, about two months later, he did have a model, sir. I went over to Detroit about two months later, saw him working on a model, saw him cutting off pieces of brass tubing, and asked him what that was. He said it was to make a socket with, or a plug to insert in the

socket. He at that time had a model connected up to an old storage battery on a bench, and at that time I did see the thing snap on and off automatically and saw him light a cigarette from that particular model.

Q. 20. Did you have to remove a part in order to get your light?

454 A. You did. He turned the thing in his hand and had a watch or an old clock standing on the bench and said, "Now, Sid, if you will wait a minute, or half a minute, you will see that thing snap off." I saw the thing snap off and he took it out of the socket and lighted his cigarette with it.

Q. 21. Did you ever light a cigarette with it?

A. No, because I do not smoke.

Q. 22. Can you tell us approximately when it was you saw this model that you have described?

A. Yes; it must have been early in '26, because there was a funny coincidence on that thing. We walked into the place and it was very cold. I remarked to Mr. Mead, and I believe Mr. Dunsmore was present, that they ought to get more stoves fixed up and get more heat. Now that I was connected with the thing I did not want any of the employes to get sick or anything like that so we could not get our items to supply our orders.

Q. 23. About when was that, Mr. Jessop?

A. That was either March or April.

Q. 24. Of what year?

A. '26.

Q. 25. Of the year 1926?

A. That is correct.

455 Q. 26. Did you have contact with that device after that time, that is to say, that model or any development therefrom from that time on?

A. Yes, from that point on we started to make several models to get the thing perfected, and eventually the thing was commercialized.

Q. 27. Did you have to do with the commercialization of the device?

A. We marketed it.

Q. 28. You marketed it?

A. Yes, sir; it was called the Jessop Automatch.

Q. 29. I tender you a document which has been heretofore marked Plaintiff's Exhibit 32, and ask you whether or not that is a leaflet that was put out in connection with the device which you marketed?

A. That is correct. That was the leaflet that went in with the device, instruction sheets.

Q. 30. Do you know about when these instruction sheets were put out, have you some estimate as to that time?

A. Well, it must have been in '27.

Q. Will you please look at the knocked-down carton which I tender you, which carton has been heretofore marked Plaintiff's Exhibit 35, and state whether or not you can tell what it is.

456 A. That was the carton which enclosed the lighter. That went in there and the lighter was boxed and shipped to the customer.

Q. 32. You mean Plaintiff's Exhibit 32?

A. The Jessop Automatch lighter.

Q. 33. And your instruction sheets?

A. Yes, sir.

Q. 34. To whom did you sell any of the lighters when you commercialized it?

A. Sold Montgomery Ward, Western Auto Supply and the rest of the chain stores dealing in automotive parts.

Q. 35. Do you know whether or not your device, the one about which we are speaking, was listed in the catalogue of Montgomery Ward & Company?

A. It was.

Q. 36. Will you please look at the pages of the catalogue which I tender you, and particularly the cover page and page 653, and state whether or not your device is the device illustrated and referred to on one of those pages, the cover page or page 653?

A. Yes, sir; it is right here, called the Automatic Lighter. There is the shape of it and the identical item.

457 Q. 37. That is on page 653 of that catalogue?

A. That is on page 653; evidently this is a photostatic copy.

Q. 38. Yes, that is a photostatic copy. For what year?

A. Fall-winter, 1928-1929.

Q. 39. Approximately when would you say, with respect to the coming out of this catalogue of Montgomery Ward, that you brought the lighter to the attention of Montgomery Ward & Company?

A. About six months prior to that. They work on their catalogues about six months in advance, sometimes longer.

Q. 40. Sometimes longer?

A. Yes, sir. In other words, they had to make a test of this particular lighter, because they would go to the trouble of doing that, to see that it was commercially perfect.

Q. 41. Is that the practice of Montgomery Ward & Company?

A. It certainly is, so far as I know.

Q. 42. Have you ever had contact with them before or after this incident about which we are speaking which leads you to understand that that is the practice of
458 Montgomery Ward & Company?

A. Yes, I know when the Jessop button came out they tested the thing for maybe eight or nine or ten months before they even thought of putting it in their catalogue for sale.

Q. 43. Do you know yourself why that device snapped on and off which you saw on the bench at Central Stamping Company, Mr. Jessop?

A. Yes, I knew why it snapped off, because he took it apart and showed me the thermostatic switch in there, which raised up when it got hot, and came back when it got cold, it came back again, when he raised up this little catch or knob it would snap off and removed the catch.

Q. 44. I tender you a device which has heretofore been marked Plaintiff's Exhibit 32, and will ask you to state whether or not you can identify that device?

A. Yes, sir; that has been in my possession for a good many years. It was made for my desk.

Q. 45. Is it one of these Mead devices?

A. One of the Mead devices.

Q. 46. About how long would you say you had that on your desk?

A. Well, I have not had it on my desk all that par-
459 ticular time.

Q. 47. But around your place?

A. In my possession.

Q. 48. In your possession?

A. Yes, sir; I would say that was made up in '27 or '28, I am not sure, sir.

Q. 49. But it has been in your possession ever since?

A. Yes, sir.

Q. 50. Will you please look at the device which I tender you, which has been heretofore marked Plaintiff's Exhibit 33, and state whether or not you have ever seen that before?

A. I have.

Q. 51. What do you know about that device?

A. This particular device was taken by Mr. Mead and myself to a Mr. McManus' office, in the General Motors Building, Detroit, and demonstrated to Mr. McManus, who said at that time that he had contact with a Mr. Earle, who represented, I don't know, some official of General Motors, represented himself to be some official of the General Motors Company. In Mr. McManus' office the item worked perfectly and Mr. McManus was very much enthused and was to submit the device for further test to Mr. Earle, and from Mr. Earle it was to go
461 to Mr. Fred Fischer for final approval for standard equipment on the General Motors cars. What happened to it after it left the possession of Mr. McManus, I am unable to state.

Q. 52. Was it used for standard equipment on cars, was the order obtained?

A. No, sir.

Q. 53. Will you look at the set of papers I tender you, which have been heretofore marked Plaintiff's Exhibit 31, and state whether or not you have ever seen those papers before?

A. Yes, sir; these are the claims of Mr. Mead, or the papers requested by our patent attorneys at that time. I know his name was Pineles, or something like that.

Q. 54. Of Cromwell, Greist & Warden, of Chicago?

A. Of Cromwell, Greist & Warden, of Chicago.

Q. 55. They were your patent counsel?

A. They were our patent counsel.

Q. 56. You had these papers written up by Mr. Mead so you could take them to the Patent Office?

A. That is correct; yes.

Q. 57. Do you know about when that paper was prepared? I mean roughly?

462 A. Well, it says on here, August 6th, 1927, but I believe Mr. Mead must have worked on that quite some time preparing that, long prior to that, because I understand Mr. Johnson,—I do not mean our Mr. Johnson,—George W. Johnson went over the papers and helped him write up some of these descriptions stated in there.

Mr. Wiles: That is objected to as hearsay.

Q. 58. At any rate, the papers embraced within Plaintiff's Exhibit 31 are those which were obtained to help patent counsel prepare the application for patent; is that it?

A. That is correct.

Q. 59. Have you any interest in the plaintiff in this suit, the Automatic Devices Company?

A. No, sir.

Q. 60. Have you any interest in Casco Products Corporation, of Bridgeport, Connecticut?

A. No, sir.

Mr. Byrne: That is all.

Mr. Wiles: No cross-examination.

(Deposition closed.)

By agreement of counsel for the respective parties to the above entitled cause, the signature of the witness to the foregoing deposition was waived.

463 And on, to wit, the 29th day of September, 1939 came the Plaintiff by its attorneys and filed in the Clerk's office of said Court its certain Exhibits—4, 5, 6, 30, 31, 32, 34, 36, and 39, in words and figures following, to wit:

464 PLAINTIFF'S EXHIBIT 4.

June 28, 1938.

Registered Mail
Return Receipt Requested
Sinko Tool and Manufacturing Company,
351 North Pulaski Road,
Chicago, Illinois.

Gentlemen:

The automatic cigar lighter which, we have been informed, is being offered by you to automobile manufacturers and the trade, was brought to our attention recently.

Your said automatic cigar lighter is a palpable infringement upon letters patent of the United States No. 1,736,544 granted on November 19, 1929 on the invention of Herbert E. Mead for Cigar Lighter.

The said patent No. 1,736,544 is the property of our client, Automatic Devices Corporation of Bridgeport, Connecticut.

Notice is hereby given to you on behalf of our said client of the said patent No. 1,736,544 and of your infringement thereon and demand is hereby made upon you that you discontinue your infringement upon the said patent and make suitable settlement with our client for your wrongful invasion upon its said rights.

Request is made that you advise us, within ten days from the date of this letter, what course you intend to pursue; that is, whether or not you will accord respect for the rights of our client or that you intend to continue

your infringement upon the rights of our client. If we do not hear from you by the time mentioned, we will
465 be obliged to carry out instructions by instituting suit against you for infringement of the said patent, to enforce respect for the rights of our client.

Yours very truly,

TJB:L Cooper, Kerr & Dunham.

466 PLAINTIFF'S EXHIBIT 5.

December 15, 1938.

Sinko Tool and Manufacturing Company,
Chicago,
Ill.

Gentlemen:

In my letter to you of December 14th, 1938, referring to Patent No. 2,140,311, the claims enumerated should have been claims 14 to 26, both inclusive, rather than claims 14 to 27, both inclusive.

Very truly yours,

AAJ:AP
CC. to Messrs. Huxley and Byrne.

467 (Stamp) A. A. Johnson, Patent Attorney Received Dec 19 1938

Post Office Department
Official Business

Registered Article
No. 21386
Insured Parcel
No. .....

Penalty for Private Use
To Avoid Payment of
Postage, $300
Postmark of Delivering
Office
(Chicago, Ill.)
(Dec 16)
(6.30 PM)
(1938)
(Garfield Park Sta.)

Return to Arthur A. Johnson
(Name of Sender)
Street and Number,
or Post Office Box, 945 Main St.,
Bridgeport,
Connecticut.

Return Receipt

Received from the Postmaster the Registered or Insured Article, the original number of which appears on the face of this Card.

Sinko Tool & Mfg Co
(Signature or name of addressee)
A W Nelson
(Signature of addressee's agent)
Date of delivery, Dec 16 1938
Form 3811

467½ Form 3806 (Rev. Jan. 21, 1935)
Receipt for Registered Article
No. 21386
Registered at the Post Office indicated in the Postmark
Fee paid 15 cents
Class postage 1
Declared value No
Surcharge paid, $.....
Return Receipt fee 03
Spl. Del'y fee .....
Delivery restricted to addressee:
in person ....., or order Fee paid
Accepting employee will place his initials in space indicating restricted delivery.
Postmaster, per W

(Postmark of)
(Bridgeport,)
(Conn.)
(Dec)
(14)
(1938)
(Registered)
(Mailing Office)

The sender should write the name of the addressee on back hereof as an identification. Preserve and submit this receipt in case of inquiry or application for indemnity.

Registry Fees and Indemnity.—Domestic registry fees range from 15 cents for indemnity not exceeding $5 up to $1 for indemnity not exceeding $1,000. The fee on domestic registered matter without intrinsic value and for which indemnity is not paid is 15 cents. Consult postmaster as to the specific domestic registry fees and surcharges and as to the registry fees chargeable on registered par-

cel-post packages for foreign countries. Fees on domestic registered C. O. D. mail range from 25 cents to $1.20. Indemnity claims must be filed within one year (C. O. D. six months) from date of mailing.

468 December 14, 1938.

Sinko Tool and Manufacturing Company,
Chicago,
Ill.

Gentlemen:

I enclose a copy of United States letters patent No. 2,140,311, which issued on December 13, 1938, to Joseph H. Cohen, and assigned to my client, Automatic Devices Corporation, of Bridgeport, Conn.

I have examined your automatic cigar lighter of the type which you are selling to Oldsmobile and Hudson, and I find that many of the claims of this patent are infringed by the manufacture and sale of your automatic lighter. As your device is at present understood, claims 14 to 27, both inclusive, are infringed by said device.

You are hereby requested to immediately desist from further manufacture and sale of the device complained of.

Your attention is also called to United States letters patent No. 2,129,374, granted September 6, 1938, on an application of the writer, and assigned to Automatic Devices Corporation, which is also infringed by the automatic cigar lighter which you are manufacturing and selling to Oldsmobile and Hudson. As at present understood, your said device infringes claims 1, 4, 5 and 7.

You are requested to immediately desist from further manufacture and sale of the device complained of, and to account to my client for past infringement.

469 In view of the fact that in the past you have shown an unwillingness to recognize the rights of my client and it has been necessary to file suit against you, a supplemental complaint is in the course of preparation, including patent Nos. 2,140,311 and 2,129,374, and, unless you give assurance within the next five (5) days to Henry M. Huxley, Esq., of Chicago, Illinois, counsel for my client, that your infringing acts will cease forthwith, I have asked Mr. Huxley to immediately file the supplemental bill of complaint.

Very truly yours,

AAJ:AP
Enc.
Registered
CC. to Messrs. Huxley and Byrne

486 PLAINTIFF'S EXHIBIT 30.

Bill of Sale

(Cut)

Know all Men by these Presents, That Ernest J. Landry, as Trustee and Mortgagee of Central Stamping Company of the City of Detroit in the County of Wayne and State of Michigan, party of the first part, for and in consideration of the sum of One and no/100 Dollars, lawful money of the United States, to him and other valuable consideration paid by S. T. Jessop, party of the second part, the receipt whereof is hereby acknowleged, has bargained and sold, and by these presents does grant and convey, unto the said party of the second part, his executors, administrators or assigns, all the following goods and chattels, to wit: All of the assets of the said Central Stamping Company, including all machinery, furniture, equipment and all material of every description including office furniture and equipment and all accounts receivable and any other assets of any description which said above-described goods and chattels belong to Ernest J. Landry, as Trustee and Mortgagee of said Central Stamping Company and are now in his possession at 2152 East Larned Street, City of Detroit, Michigan

To Have and to Hold the same unto the said party of the second part, his executors, administrators and assigns, Forever. And the said party of the first part, for his heirs, executors and administrators, does covenant and agree to and with the said party of the second part, his executors, administrators and assigns, to Warrant and Defend the sale hereby made of said property, goods and chattels, unto the said party of the second part his executors, administrators and assigns, against all and every person or persons whatsoever.

In Witness Whereof, the said party of the first part has hereunto set his hand and seal this 27th day of December A. D. 1926.

Ernest J. Landry [L. S.]
Trustee and Mortgagee Central Stamping Co., a Mich. Corp.

Signed, Sealed and Delivered in
Presence of
Tillie Sweeney
Gail A. Atkins

487 State of Michigan, } ss.
County of Wayne. }

Ernest J. Landry, being duly sworn, deposes and says that he[1] is the vendor named in the within bill of sale, that he has knowledge of the facts, and that the consideration of said instrument was actual and adequate, and that the same was given in good faith for the purposes therein set forth.

Ernest J. Landry.

Subscribed and sworn to before me this 27th day of December, 1926.

Gail A. Atkins,
Notary Public, Wayne County, Michigan.

My commission expires January 14, 1927.

[1] Insert "is" or "is one of" or "he makes this affidavit for."

27

Bill of Sale

Ernest J. Landry, as Trustee and Mortgagee of Central Stamping Company

To

S. T. Jessop

Filed Dec 27 1926 Richard W. Reading, City Clerk.

[redacted]

Plaintiff's Exhibit 31

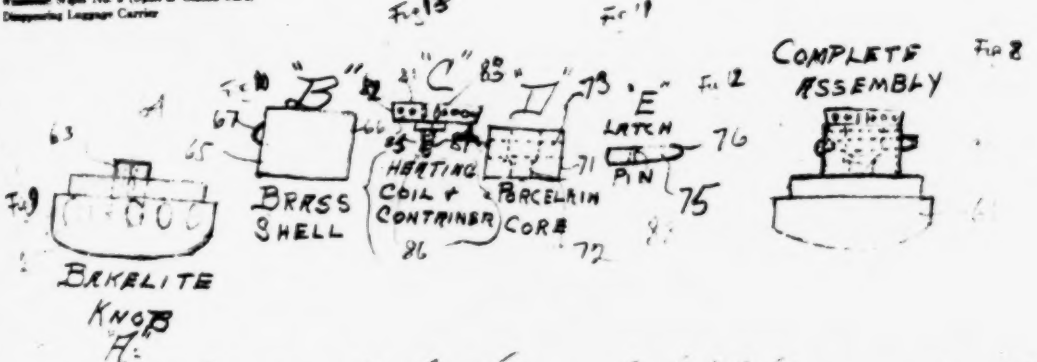
RED CAP PRODUCTS

Valve Cover (Chevrolet)
Cloth Collar (Olds) (Chevrolet)
Horn Button (Ford and Chevrolet)
Steering Post Bracket (Ford)
Spark and Throttle Extension (Ford)
Windshield Wiper No. 1 (Open Cars)
Windshield Wiper No. 2 (Open or Closed Cars)
Windshield Wiper No. 3 (Open or Closed Cars)
Disappearing Luggage Carrier

THE CENTRAL STAMPING CO.

2152 LARNED STREET EAST
DETROIT, MICHIGAN

TELEPHONE
EDGEWOOD 3088



Mechanical features of lighter construction;
A- Bakelite knob with 1/4 sqr x 1/2" long brass pin molded in center. Brass pin drilled & tapped thru center.

B- Stamped & drawn brass shell open at top and closed at bottom with 1/4 sqr hole punched in bottom to fit over square pin on part A. Clearance hole punched in one side for pin E and on bottom on opposite side 1/16" to act as driver.

"C" Heating Coil Container: Stamped & formed brass, perforated on side with 2 slots for inserting end of coil thru for ground connection. Clearance hole in bottom for 3-56 screw. Heating element held on 3-56 screw against bottom of "C" making replaceable unit.

OVER

D-Porcelain Coil Mandrel to be inside of shell "B" with 1/4" sq hole in bottom to fit over sq pin in Bakelite knob "A". Round hole approx 1/8" dia at right angle to square hole, for latch pin "E".

E-Latch Pin-Brass pin approx 1/8" dia x 3/4" long tapered and rounded at one end and tapped thru center 3-56 for positive connection on coil assembly.

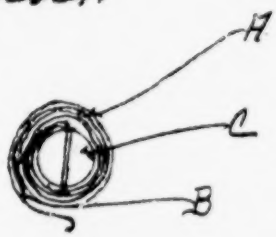
Insert porcelain coil "D" in Brass Shell "B". Let "D" rest on sq brass pin in Bakelite knob "A" now in place with 4-36 Brass head screw thru hole in center of porcelain into sq brass pin. Insert Brass latch pin "E" in hole in side of porcelain coil with tapered end out. Screw unit "C" into place by 3-56 screw into 3-56 tapped hole in latch pin E. The Brass shell "B" should be 1/32 longer than porcelain coil "D" so that the last turn of winding on coil "C" will wrap slightly on inside of shell "B" when screwed down in place. This makes a simple, cheap construction, and one that is replacable. This is important, especially in the case of heating unit "C" as they burn out in time, and are sold at 50¢ each.

488a

S. THOMPSON CO., INC.

Received Aug 11, 1927

We are attaching here to sketch of thermostatic coil spring which will explain method of releasing release. The catch is constructed of thermostatic metal to act as an added safety measure should the ~~coil~~ action of coil not be sufficient to release, before heating element in plug would burn out. Coil thermostatic spring is fastened in bottom of socket directly under heating element or ring the action being governed by ammount of heat passing thru coil.



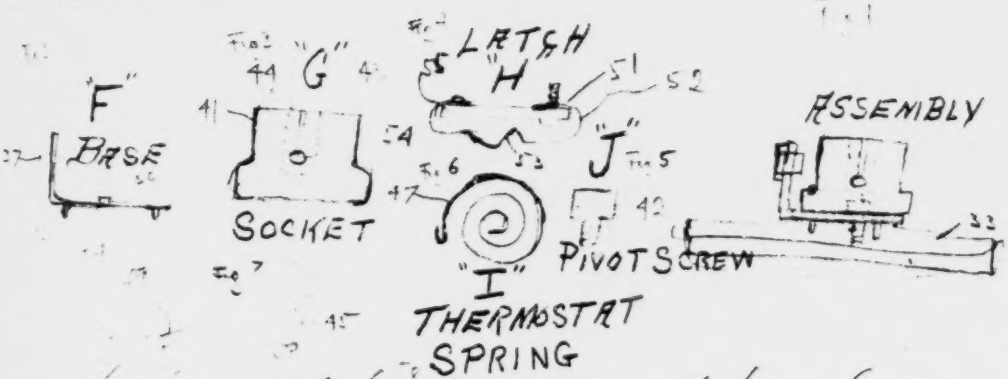
"A" Coil spring of thermostatic metal
"B" Inner coil spring of Jasper Bronze metal to maintain constant outward tension on thermostatic spring A.
"C" Pivot screw or rivet with slotted head.

489

RED CAP PRODUCTS
Valve Cover (Chevrolet)
Clutch Collar Oiler (Chevrolet)
Horn Button (Ford and Chevrolet)
Steering Post Bracket (Ford)
Spark and Throttle Extension (Ford)
Windshield Wiper No. 1 (Open Cars)
Windshield Wiper No. 2 (Open or Closed Cars)
Windshield Wiper No. 3 (Open or Closed Cars)
Dunnpartite Luggage Carrier

THE CENTRAL STAMPING CO.
2152 LARNED STREET EAST
DETROIT, MICHIGAN

TELEPHONE
EDGEWOOD 3088



Mechanical features of socket release const:-
"F" Stamped + formed of brass. One lug formed up to set in slot in base of socket "G" to act as stop. Two lugs formed down to anchor Base "F" to fiber base. One hole punched in center for Pivot Screw "J". One section of side formed up for retaining latch "H."

"G" Socket: Closed at bottom with hole punched in center for Pivot screw "J." Open at top. Clearance punched on one side for latch tip "E." Slot punched on one side to fit embossed portion of shell "B." and plate at bottom to limit Thermostatic Spring "I"

OVER

to operate.

"H" Latch or Ketch. Phosphor Bronze formed and welded to piece of fiber.

"I" Thermostatic Spring. Coiled of thermostatic metal.

"J" Pivot Screw. Special screw with slotted head to permit anchoring end of thermostat spring "I."

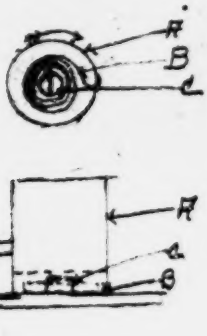
Assembly.

Latch "H" screwed to upright part of Base "F" and insulated. Pivot screw "J" passed thru socket "G" and Base "F" and fiber base and screwed into metal clamp. Thermostat spring I fastened in place one end in slot on Pivot screw "J" and other end to socket "G". This completes assembly except attaching outer cover.

These sketches and instructions are very crude, but they may be of use to your patent attorney in drawing his claims.

H. E. M.

490 a



As the socket "A" is turned to right, the thumb spring "B" is drawn tightly around stationary rivet head "C" and locked by catch. When the spring "B" starts to expand the tension becomes greater and it builds up enough power to pull the socket off catch.

Would like not have phosphor
bronze compensator spring, but
if it is necessary it will act
about the same as the spring
on a sputer. It will be found
inside the thermostatic
spring, and thereby have
a constant tension on the
thermostatic metal. This metal
does not seem to have the
lag that phosphor bronze
does, and also has a tendancy
to stretch. Ask the patent
attorney if this fact can not
be covered [illegible]
until the exact design, and
gauge of metal is decided
upon

Yours

Plaintiff's Exhibit 32

Instructions for the Installation and Operation

No. 100 JESCO AUTOMATCH LIGHTER

(For All Cars Using a 6 Volt Battery)

Disregard Instruction on Box

Install on instrument board in any convenient place free from obstructions. Draw thumb screw up tight and attach wires. One wire goes to the discharge terminal of the ammeter and ground wire (marked GND) is grounded to metal part of body —any convenient screw will do. If clamp is discarded, Jesco Automatch can be installed on dash by means of the long screws furnished. Drill two holes in dash and tighten securely by means of nuts, also furnished. Felt pad can be used between base of lighter and dash on either installation.

FOR INSTALLING ON MODEL "A" FORD CAR

Discard clamp. Install on right hand side of cowl by means of long screws furnished (envelope enclosed). Drill two holes in cowl, insert screws and tighten securely by means of nuts (also in envelope). Felt pad should be used between base of lighter and cowl. Splice on long wire (furnished) to wire (not marked) by means of solder to insure TIGHT connection, tape and run this wire down to positive terminal of battery. Be sure this connection is TIGHT. Other wire (marked "GND.") is grounded to metal part of cowl or body—any convenient screw will do.

TO OPERATE

Insert the bakelite knob and turn to extreme right to "ON" position and release gently. This allows contact pin to drop securely into place in front of contact spring, assuring a better connection. Within a few seconds the Jesco Automatch lighter will reach the proper degree of heat and automatically turn to "OFF", the signal being an audible click. Remove and use as you would a match.

IMPORTANT NOTICE: The battery current is automatically turned off when lighter reaches a predetermined degree of heat. This is positive protection against excessive battery drain and possible fire and damage to your car. If the lighter is used repeatedly without allowing the unit to cool and thermostatic metal to return to normal position, it will be noticed that the catch will refuse to engage. This is not a defect, but the safety feature being brought into use. If a light should be desired at this particular time without waiting for unit to cool (note breathers in case for this purpose), then you can manually operate the lighter by turning to extreme right and holding it there for a few seconds—remove and use. After the unit has cooled the catch will engage as before.

CARE: It is advisable after several months' use to scrape surface of heating element (coil) top surface with blade of knife, thus cleaning corrosion from surface of element. It is well to install a new tip twice a year. These are easily installed in the end of knob by means of any thin strip of metal inserted in slots in the cup and screwing down into contact pin until the flange on tip bears evenly on edge of knob sleeve. Tips can be purchased from your dealer or direct from us at 50c each.

This lighter has been thoroughly tested before leaving the factory, and is sealed. It is guaranteed against defective workmanship and materials.

DO NOT ATTEMPT TO REMOVE BAKELITE KNOB UNLESS IT IS IN "OFF" POSITION.

S. T. Jessop Co., Inc. 219-221 W. Chicago Ave., Chicago, Ill., U.S.A.

494 PLAINTIFF'S EXHIBIT 34.

No. 6068-A

The Central Stamping Co.
(Incorporated)
2152 Larned Street East
Detroit, Michigan

August 6th, 1926

Sold To S. T. Jessop Co. Inc.,
Chicago, Ill.

Your Order No.
Terms Reg.

	Via	
To special Dies, Tools and Fixtures for Two-in-One Button:		
1—Spinning Tool for Shells	$35.00	60.00
1—Horn Die for handle hole in shell	25.00	45.00
1—Blanking Die for switch handle	30.00	50.00
1—Forming Die for Switch Handles	15.00	30.00
1—Blanking Die for Fibre Bases	125.00	150.00
1—Blanking Die for Fibre Insulators	50.00	70.00
2—Gang Forming Tools & Holder for Nuts	20.00	35.00
1—Gang Cut-off Tool Holder	12.00	18.00
1—Milling Fixture for milling slot in nuts	8.00	10.00
1—Straight Shank Drill Holder for 35/64" Drill	16.00	25.00
2—Straight Shank Drills, high speed, 35/64"	2.00	2.00
1—3/8" High Speed convex Milling Cutter	10.00	15.00
1—Special High Speed cutter for making Form. Tools	12.00	18.00
6—5/8" -16 Special taps	18.00	22.00
6—5/8"—18 Special taps	18.00	22.00
2—Dies for Forming Rivets	24.00	35.00
		$617.00

495 Page two

No. 6088-A Cont'd

1—Rivet Forming Die for contact Assembly	18.00		25.00
1—Wire Stripping machine complete with 1/4 H.P. Motor	35.00		60.00
3—Pairs Assembling Pliers	3.00		5.00
1—Final Assembly Bench Fixture	20.00		45.00
			48.00
		$496.00	
			$183.00
1—Blanking Die for Contact Points	24.75		
		$520.75	

(Stamp) Paid Aug 6 1926 The Central Stamping Co., Detroit, Mich. EJL.

Plaintiff's Exhibit 36

MONTGOMERY WARD & CO.

Catalogue Number [illegible] Fall and Winter 1928-29

Demands Good Lights

89¢

Colored Spotlight For All Cars

Red, Green, Blue or Black

Something new and unapproached and attractive. With 4½-inch silver-polished reflector; nonrusting all brass body; large and rubber handle grip; nonscratch Universal ball and socket adjustment. Easily detached for new automobile. With 21 c.p. bulb. 3 feet of cord. Instructions included. Ship. wt. 1 lb. 4 oz. State color wanted. Black unless otherwise specified.

61 C 6811 6-volt
61 C 6812 18-volt For Ford magneto ..... **89¢**

61 C 6813 6-volt
61 C 6814 18-volt For Ford magneto **$1.15**

$1.35

Our Best Low Priced Spotlight

With many features found only in the highest priced spotlights. The 4½-inch brass reflector has genuine silver plating which throws a more powerful light than the nickel-plated kinds. Genuine Mazda 21 c.p. bulb regulated by adjustable focusing device. Easily operated switch. Water-tight nickel-plated rim. Fits all open or closed cars. Ship. wt., 1 lb. 8 oz.

61 C 6830—6-volt **$1.35**
61 C 6831—12-volt **1.45**
61 C 6832—For Ford magneto, 18-volt .. **$1.55**

Clamp-On Stoplight

Fits all tail-lights. Very easily installed; no drilling required. Attaches to rear present tail-light. Red lens with word "Stop" in large letters gets immediate attention. Small green jewel at top of lens. Body of lamp enameled black with nickeled rim. Has 4¼ inches wide, 3 inches deep. Complete with 6-volt bulb, 9 feet of insulated wire, water-proof switch, all attachments and instructions. Ship. wt. 1 lb. 4 oz.

61 C 6788 With band that fits around tail-light ..... **95¢**

61 C 6789 With bracket that bolts back of tail-light ..... **95¢**

95¢

Replacement Stop and Tail-Light

Permanent red "Stop" and tail lens with white light for license plate. Black enameled steel with nickel-plated brass front frame. 4 inches in diameter, 2¾ inches deep. Fitted with universal bracket so it can be used to replace any combination stop and tail light. Fits all cars except 1925 26 27 Fords. Ship. wt. 1 lb. 6 oz.

61 C 6867 ..... **$1.19**

Complete Stop and Tail-Light

Same as above with 12½ feet of wire, water-proof switch and instructions are included. For all cars except 1925 26 27 Fords.

61 C 6868 Ship. wt. 1 lb. 12 oz. **$1.75**

Moto-Meter Light

For Use on Boyce Moto-Meters

$1.65

An attractive and useful addition to the sending equipment of any car. Right on through Moto-Meter by reading temperature at night. Lights with headlights. Replaces cap plate on back of Moto-Meter. Has 2 lenses; lens in front, red and green lights on side. Connection for filling radiator. Six-volt, 2 c.p. bulb. Instructions included.

61 C 6844 For Universal Moto-Meter **$1.89**
61 C 6845 For Standard Moto-Meter **1.88**
61 C 6846 For Midget Moto-Meter **1.88**

Easily Installed Dome Light

Finely beautifully nickel-plated. With [illegible] and star design. Fitted with two screws. Six-candlepower bulb included. Fits [illegible]. A convenience you will appreciate. Ship. wt. 1 lb. 4 oz.

61 C 6835 ..... **38¢**

65¢ Each

Jeweled Parking Lights

Protect your car with snappy looking Jeweled Parking Light. The jewel lenses intensify the strength of the two candle-power bulb giving effective lights. Each fixture has switch and two candle-power bulb. Size 3¾ by 1¾ inches. Bright black enamel finish with nickeled brass rims. Easily attached. Instructions for installing. Ship. weight, 6 ounces.

61 C 6729—Two-jewel; red and white. ..... **65¢**
61 C 6730—Three-jewel; red, white, green. Each ..... **75¢**

Tail-Lights for All Cars

Standard type 3-inch ruby lens with window. Black enameled.

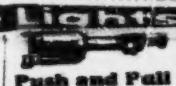
61 C 6721—With one prop bolt. 6-V., S. C. bulb. Ship. weight, 10 oz. ..... **38¢**
61 C 6722—With two prop bolts. 6-V., S. C. bulb. Ship. wt., 10 ounces ..... **38¢**
61 C 6723—With one prop bolt. 18-24-V., D. C. bulb for magneto use. Ship. wt., 10 oz. **43¢**
61 C 6724 With bracket, same 1925-27 Fords. 2½-inch lens, 6-V. Ship. wt., 1 lb. 4 oz. **47¢**
61 C 6731 Repair Parts for the 1927 tail-light including glass ring, metal ring, red enameled and sterling ring. Ship. wt., 12 ounces ..... **25¢**

Side Lights, Switches, Fuses

Stoplight Switch

For use with any stoplight. The best we can buy. Waterproof and indestructible. Working parts encased in rust-resisting steel box. Requires space 2½ by 1⅝ inches for mounting. Ship. weight, 3 ounces.

61 C 6791 ..... **32¢**
61 C 6792—Standard Stoplight switch ..... **19¢**

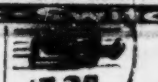


Push and Pull Dash Switch

16¢

An ideal size for mounting on dashboard. Neat nickel-plated knob. Easy to install, simply requiring the drilling of a ½-inch hole. Suitable for wood or metal dash. Mechanical parts are carefully tested, practically trouble-proof. Ship. wt. 4 oz.

61 C 6813 ..... **16¢**



$1.25

Dimming Switch

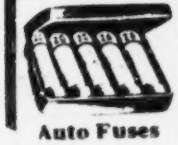
Clamps to spoke of steering wheel, easily and quickly operated with thumb and parts of Bakelite. Contact points tempered bronze. Has 1½ by ⅞ inches. Quickly and easily installed on any car. Furnished with 45 inches insulated wire and instructions. Ship. weight, 8 ounces.

61 C 6818 ..... **$1.25**

Side Lights

Equipped with frosted lenses. Diameter, 2½ inches. Quickly installed on roof of any car by drilling ½-inch hole. Furnished in drum or bullet shape. Equipped with 6-volt, 2-candle-power bulbs that give a good light. Rims are nickel-plated. Ship. weight of drum lights, 1 pound, per pair; bullet lights, 1 lb. 8 oz. per pair.

61 C 6748 Drum shape with one red, one green jewel lens on side. Per pair **$1.67**
61 C 6747 Drum shape without jewels. Per pair **$1.49**
61 C 6750—Bullet shape, black with nickeled rim. Per pair **$1.79**
61 C 6749—Bullet shape, all nickel. Per pair **$2.49**

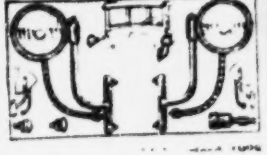


Auto Fuses

DeLuxe Side Lights

$7.95

A Pair



Auto Bulbs—*General Electric Licensed*

Manufactured under General Electric license. Nitrogen-filled—give clearwhite light. We have tested them thoroughly in our laboratories and guarantee them to be high quality bulbs. Each pair packed in strong carton. **Prices for these bulbs are per pair.** Ship. weight, per pair, 6 oz.

Tungsten Side and Tail-Light Bulbs

Prices Are Per Pair

Double Contact	Single Contact	Volts	Candle Power	Per Pair
61 C 8110	61 C 8120	2-4	2	24¢
61 C 8111	61 C 8121	6-8	3	24¢
61 C 8112	61 C 8122	6-8	6	25¢
61 C 8113	61 C 8123	10-14	3	37¢
61 C 8114	61 C 8124	10-14	6	37¢

Corrugated Blue Glass Headlight Bulbs

The blue glass absorbs the yellow rays and leaves only clear white light. Use a little larger candle-power than regular bulb.

Double Contact	Single Contact	Volts	Candle Power	Per Pair
61 C 8131	61 C 8141	6	21	$.89
61 C 8132	61 C 8142	6	32	1.09
61 C 8133	61 C 8143	6	50	1.29
61 C 8134	61 C 8144	12	32	1.09
61 C 8135	61 C 8145	12	50	1.29

Corrugated Clear Glass Headlight Spotlight and Stoplight Bulbs

Prices Are Per Pair

Double Contact	Single Contact	Volts	Candle Power	Per Pair
61 C 8101	61 C 8181	6-8	21	24¢
61 C 8102	61 C 8182	6-8	32	25¢
61 C 8103	61 C 8183	6-8	50	25¢
61 C 8104	61 C 8184	6-8	9	37¢
61 C 8105	61 C 8185	10-16	21	25¢
61 C 8106	61 C 8186	10-16	32	25¢
61 C 8107	61 C 8187	10-16	50	25¢
61 C 8108	61 C 8188	10-16	9	37¢
61 C 8116	61 C 8196	18-24	21	25¢
61 C 8117	61 C 8197	18-24	32	25¢

Double Filament Bulbs

Dependable beam 21-21 candlepower, 6-volt for 1926 and 1927 Buick, Cadillac, Chrysler 80 and Imperial, Reo, Packard and Studebaker. For 1927 Flint, Nash, Oakland, Oldsmobile, Pontiac and Willys-Knight. For all popular 1928 cars except Chevrolet, Ford, Chrysler 52, Dodge 4, Whippet and Star.

61 C 8150—Per pair ..... **38¢**

Latest Corrugated Type for Fords

For Use With Battery

Use 6-volt bulbs only. Small bulbs listed above. For headlights use these two filament bulbs all double contact. Prices are per pair.

61 C 8120—Two-filament corrugated clear glass bulbs, 2 and 21 candle-power. Per pair ..... **34¢**
61 C 8149—Two-filament corrugated blue glass bulbs, 2 and 21 c.p. Per pair ..... **65¢**
61 C 8139—Two-filament corrugated blue glass bulbs, 6 and 32 c.p. Per pair **$1.15**

61 C 8131—Latest type headlight bulb, specially built for Fords. Gives 21 candle-power on both bright and dim switch but dim filament is out of focus, throwing a short beam without glare. Per pair ..... **47¢**

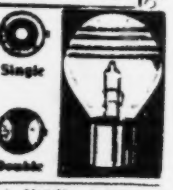
For Use With Magneto

Use 9-volt bulbs 61 C 8103 in headlights, 18-volt 61 C 8105 in spotlights, 18-volt, 61 C 8115 or 61 C 8125 in tail-light and dashlight as needed.

Genuine Mazda Auto Bulbs

Manufactured by General Electric Co.

You can save money on genuine National Mazda Bulbs by buying at Ward's. Latest type, gas-filled. Headlight bulbs have corrugated glass ends. Check the Mazda number on the bulb you now have and order by article number at left of the Mazda number. **Prices are for single bulbs.** Ship. weight, each, 2 ounces.



Mazda Auto Bulbs for All Cars

Double Contact Article No.	Mazda No.	Single Contact Article No.	Mazda No.	Volts	Candle Power	Each
61 C 8200	1133	61 C 8210	1154	6-8	21	33¢
61 C 8201	1141	61 C 8211	1142	6-8	32	33¢
61 C 8202	1155	61 C 8212	1156	6-8	50	33¢
61 C 8203	1143	61 C 8213	1144	6-8	9	43¢
61 C 8204	1145	61 C 8214	1146	10-16	21	33¢
61 C 8205	1147	61 C 8215	1148	10-16	32	33¢
61 C 8206	1149	61 C 8216	1150	10-16	50	33¢
61 C 8207	1151	61 C 8217	1152	10-16	9	43¢
61 C 8208	1153	61 C 8218	1158	18-24	21	33¢
61 C 8209	1159	61 C 8219	1160	18-24	32	33¢
61 C 8210	1161	61 C 8220	1162	18-24	50	33¢
61 C 8211	1163	61 C 8221	1164	18-24	9	43¢

Dependable beam with double-filament contact. For 1926 and 1927 Buick, Cadillac, Chrysler 80 and Imperial, Reo, Packard and Studebaker. For 1927 Flint, Nash, Oakland, Oldsmobile, Pontiac and Willys-Knight. For all popular 1928 cars except Chevrolet, Ford, Chrysler 52, Dodge 4, Whippet and Star.

61 C 8241—Mazda No. 1170, 6-volt, 21-21 candle-power. Each ..... **33¢**
61 C 8242—Mazda No. 1173, 6-volt, 32-21 candle-power. Each ..... **43¢**

Bulbs for Fords

For Use With Battery

Use these 6-volt bulbs in the headlights. Select tail-light, dash-light and spotlight bulbs from the general listing shown above.

61 C 8240 Mazda 1130, 21-2-c-p. Each ..... **22¢**
61 C 8241 Mazda 1170, 6-21-c-p. Each ..... **39¢**
61 C 8242 Mazda 1173, 6-32-c-p. Each ..... **45¢**

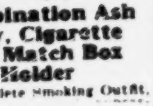
For Use With Battery

61 C 8243—Mazda 1114, 6-volt, to give dependable beam on Fords same as bifocal bulbs for large cars—21 and 21 c.p. Each ..... **35¢**

For Use With Magneto

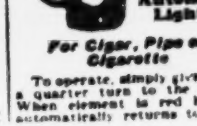
Use 9-volt bulb 61 C 8210 in headlights, 18-volt 61 C 8209 in spotlights, 18-volt 61 C 8203 or 61 C 8233 in tail-lights and dashlights.

98¢ Complete



Combination Ash Tray, Cigarette and Match Box Holder

A complete Smoking Outfit.

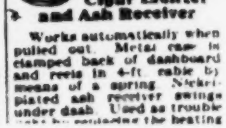


Automatic Lighter

For Cigar, Pipe or Cigarette

To operate, simply give knob a quarter turn to the right. When element is red hot it automatically returns to nor[illegible]

Clamp-On



Cigar Lighter and Ash Receiver

Works automatically when pulled out. Metal case is clamped back of dashboard and reels in 4-ft. cable by means of a spring. Nickel-plated ash receiver swings under dash. Used as trouble [illegible] by removing the heating

...plate on back of Moto-Meter ... lights in front, red and ... lights on side. Connection ... for filling radiator. Nit-vit, ... bulb. Instructions included. ... Each

61 C 6844 For Universal Moto-Meter ... $1.89
61 C 6845 For Standard Moto-Meter ... 1.88
61 C 6846 For Midget Moto-Meter ... 1.88

Easily Installed Dome Light

...plate, heavily nickel-plated. With ... bulb, ready to connect ... attached with two screws. ... switch-type. A ... both included. ... Ship. wt., 1 lb. 4 oz.

61 C 6835 ... 98¢

Each Lights

Protect your car with snappy looking jeweled Parking Light. The jewel frame ... fatigue the strength of the ... two candle-power bulb giving ... lights. Each fixture has switch and two candle-power bulb. Size 2½ by 1⅝ inches. Bright black enamel finish with nickeled brass ring. Easily attached. Instructions for installing. Ship. weight, 4 ounces.

61 C 6735—Two-jewel; red and white. ... 65¢
61 C 6736—Three-jewel; ... 75¢

Tail-Lights for All Cars

Standard type 3-inch ruby lens with window. Black enameled.

61 C 6721—With one prop bolt. 6-V., S. C. bulb. Ship. weight, 10 oz. ... 39¢
61 C 6722—With two prop bolts. 6-V., M. C. bulb. Ship. wt., 10 ounces ... 38¢
61 C 6723—With one prop bolt. 18-24-V. D. C. bulb for motor-truck use. Ship. wt., 10 oz. 43¢
61 C 6724—With bracket same as 1925-27 Fords. Fits ... bolt. 6-V. Ship. wt., 1 lb. 4 oz. 47¢
61 C 6725—Magnetic Parts for ... Each ... 98¢

Genuine Mazda Auto Bulbs

Manufactured by General Electric Co.

You can save money on genuine National Mazda Bulbs by buying at Ward's. Latest type, gas-filled. Headlight bulbs have corrugated glass ends. Check the Mazda number on the bulbs you now have and order by article number at left of the Mazda number. Prices are for single bulbs. Ship. weight, each, 3 ounces.

Single

Double

Mazda Auto Bulbs for All Cars

Double Contact		Single Contact				
Article No.	Mazda No.	Article No.	Mazda No.	Volts	Candle-Power	Each

Dependable beam with double-filament contact. For [illegible] 1926 and 1927 cars; Buick, [illegible] Chrysler 80 and Imperial 70, [illegible] Dodge, Essex, Hudson, Nash, Oakland, Oldsmobile, Pontiac, Studebaker, Willys-Knight and all popular 1926 cars except Chevrolet.

61 C 6211—[illegible] ... Each ... 33¢

Bulbs for Fords

For Use With Battery

Use these 6-volt bulbs in the headlights, ... tail-light, dash-light and spotlight bulbs from the general listing shown above.

61 C 6240 Mazda 1158, 21-3-c-p. ... 22¢ Each
61 C 6241 Mazda 1170, 6-21-c-p. ... 39¢ Each
61 C 6242 Mazda 1172, 6-32-c-p. ... 45¢ Each

For Use With Battery

61 C 6243—Mazda 1114, 6-volt, to give dependable beam on Fords same as bifocal bulbs for large cars—21 and 21 c-p. ... 35¢ Each

For Use With Magneto

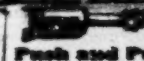
Use 8-volt bulb 61 C 6210 in headlights, 18-volt 61 C 6209 in spotlights, 18-volt 61 C 6208 or 61 C 6223 in tail-lights and dashlights.

Side Lights, Switches, Fuses

Stoplight Switch

For use with any stoplight. The best ... can buy. Waterproof and indestructible. Working parts ... in rust-resisting steel case. Requires space 2¼ by 1⅝ inches for mounting. Ship. weight, 1 ounce.

61 C 6791 ... 32¢
61 C 6792—Standard Stoplight Switch ... 16¢



Push and Pull Dash Switch

16¢

An ideal size for mounting on dashboard. Neat nickel-plated knob. Easy to install, simply requiring the drilling of a ⅜-inch hole. Suitable for wood or metal dash. Mechanical parts are carefully tested, practically trouble-proof. Ship. wt., 4 oz.

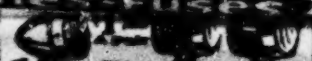
61 C 6813 ... 16¢

Ammeter Switch

$1.25

Changes to center of steering wheel; easily and quickly operated with thumb. Terminal parts of Bakelite. Contact points tungsten. Pivot bracket. Size 1½ by ⅞ inches. Quickly and easily inserted on any car. Furnished with 48 inches insulated wire and instructions. Ship. weight, 3 ounces.

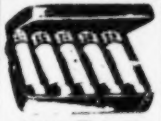
61 C 6818 ... $1.25



Side Lights

Equipped with frosted lenses. Diameter, 2½ inches. Quickly installed on front of any car by drilling ⅜-inch holes. Furnished in drum or bullet shape. Equipped with 6-volt, 2-candle-power bulbs that give a good light. Wires are nickel-plated. Ship. weight of drum lights, 1 pound, per pair; bullet lights, 1 lb. 8 oz. per pair.

61 C 6748—Drum shape with one red, one green jewel lens on side. Per pair ... $1.87
61 C 6747—Drum shape without jewels. Per pair ... $1.49
61 C 6750—Bullet shape, black with nickeled rim. Per pair ... $1.75
61 C 6749—Bullet shape, all nickel. Per pair. ... $2.49



Auto Fuses

Made according to standard specifications. Correct amperage for your car is stamped on end of the fuses now in use. Put up in metal boxes of 5 fuses each. Ship. wt., 3 ounces.

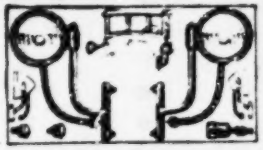
61 C 7187—Five 10-ampere fuses ... 17¢
61 C 7188—Five 15-ampere fuses ... 17¢
61 C 7189—Five 20-ampere fuses ... 17¢

Side Lights

For 1928 Fords

Designed especially for the new 1928 Ford these semi-bullet type, all nickel side lamps are a perfect match for the headlights. All brass construction; highly polished nickel finish; 3 inches in diameter, 2¼ inches deep. No wires visible from outside of car. Wire, switch and instructions included. Ship. weight, 2 lbs.

61 C 6783—Per pair ... $2.19



DeLuxe Side Lights

$7.95 A Pair

Bring your car up-to-date—many high priced 1928 cars are equipped with side lights of this type. Gracefully designed and beautifully finished in highly polished nickel plate. Bracket of German silver, remainder of lamp is brass. Latest semi-bullet shape, 4½ inches wide, 3 inches deep. If your car is now equipped with small oval lights, they can be removed and holes plugged with the two ornamental nickel-plated plugs which are furnished. Complete with 33 inches of cord, 8 inches of nickel-plated conduit, switch and installation instructions. Ship. wt., per pair, 4 lbs. 8 oz. For all cars except 1928 Ford.

61 C 6866—Complete. Per pair ... $7.95

98¢ Complete

Combination Ash Tray, Cigarette and Match Box Holder

A complete smoking outfit, neat and attractive in appearance. Clamps on without marring dash. Heavily nickel-plated brass. Fits wood or metal dashboards. Ash receiver is removable.

61 C 6787—Combination of Ash Tray, Cigarette Holder and Match Box Holder. Ship. wt., 12 ounces. ... 98¢
61 C 6788—Ash Tray and Match Box Holder only. Ship. weight, 8 ounces ... 79¢

Automatic Lighter

For Cigar, Pipe or Cigarette

To operate, simply give knob a quarter turn to the right. When element is red hot it automatically returns to neutral position, at the same time causing a "click" which indicates it is ready for use. Then it can be removed and passed around. Case is triple nickel-plated, knob of bakelite. May be bolted or clamped on dash of all cars. On 1928 Ford it must be bolted to dash. Complete with wiring and instructions. Ship. wt., 18 oz. ... $2.49
61 C 6731

Cigar Lighter and Ash Receiver

Clamp-On

Works automatically when pulled out. Metal case is clamped back of dashboard and rests in 4-ft. cable by means of a spring. Nickel-plated ash receiver swings under dash. Used as trouble light by replacing the heating unit with bulb. Instructions included. Ship. wt., 1 lb. 6 oz.

61 C 6738—Complete for 6-volt. ... $1.79
61 C 6733—Lighter only. Ship. wt., 1 lb. ... $1.19
61 C 6734—Lighter only for 1928 Ford. Bracket fastens below instrument panel using screws in panel. Ship. wt., 1 pound. ... $1.19

Fine Quality Auto Clocks

Electric Clock

Needs no winding. Always on the job and especially designed for automobile use—yet it costs less than an ordinary clock. Attaches over windshield with two screws. Visible from front and back seat. Black dial with luminous figure and hands. Electric current consumed so small it cannot be measured. Operates on 6 volts. Face 2 inches in diameter. Depth 1⅜ inches. Highly polished nickel finish. Instructions included. Ship wt., 1 lb. 4 oz.

61 C 3679—Each ... $9.65

8-Day Moto Clock

$11.75 Rim Wind

Nationally known Phinney-Walker. Built by experts to give good service. Has 8-day jeweled movement of finest quality. Rim wind and rim set with luminous dial. Nickel-plated and furnished in plush lined box—would make an excellent gift. Fits all cars. Diameter 2½ inches. Thickness ⅝ inch. Instructions included.

61 C 3869—Dash model. To install drill two ½-inch holes in dash. Ship. wt., 12 oz. ... $11.75
61 C 3870—Overhead model. Easily installed over windshield with screws. Ship. weight, 12 oz. ... $11.75

Auto Clocks

$2.15

Can be installed on dash or over windshield. Equipped with high-grade 30-hour movement. Stem wind and set. Vibration-proof case of nickel silver, highly polished. Base is 3 inches in diameter and dial 1⅝ inches. Regular dash model requires drilling hole. Clamp-on model quickly attached without drilling. Offset model fastens with two screws to frame over windshield. Instructions included. Ship wts.: clamp-on and offset models, 12 oz. each; regular dash model, 8 oz.

Number	Model	Dial	Each
61 C 3671	Dash	Luminous	$2.70
61 C 3672	Dash	Silver	2.15
61 C 3673	Clamp-on	Luminous	3.55
61 C 3674	Clamp-on	Silver	2.95
61 C 3675	Offset	Luminous	4.05
61 C 3676	Offset	Silver	3.49

Step and Kick Plate Combinations

At Money Saving Prices

$1.65 A Pair

Two types of high quality Step Plates—and a Kick Plate which matches either type. Both have highly polished frames of the best aluminum and heavy, serviceable hard rubber mats with deep corrugations. Simply designed to look well on any car. You can have either the plate with the scraper or the plain plate with or without the kick plate. The kick plates can be furnished separately or in combination with either plate. The kick plate attaches to running board apron above the running board and prevents it from being scuffed up. Cadmium-plated bolts included, for attaching to running board.

61 C 3793—Kick Plate only, 11⅝ inches long, 5⅛ inches high. Ship weight, 10 oz. Per pair ... $ .78
61 C 3794—Step Plate only, 8½ inches deep, 11⅝ inches wide. Ship. wt., 2 lbs. 2 oz. Per pair ... 1.39
61 C 3795—Step Plate With Scraper, 8½ by 11⅝ inches. Ship. wt., 2 lbs. 10 oz. Per pair ... 1.59

Aluminum Step-Plates With Rubber Mats

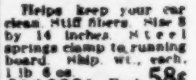
An excellent value at our low price. Best grade highly polished aluminum. Neat and serviceable. Fitted with black rubber mat of good quality. Depth 8½ inches, width 10 inches. Scraper and kick-plate are a part of the frame. Cadmium-plated bolts are furnished for attaching. Ship. weight, per pair, 2 lbs. 8 oz.

61 C 3796—Per pair ... $1.65

Running Board Cocoa Mat

Helps keep your car clean. Stiff fibers. Size 8 by 14 inches. Steel springs clamp to running board. Ship wt., each, 1 lb 6 oz.

61 C 2281—Each ... 58¢



Composition Running Board Mat

Heavy composition rubber, with strong ribs; prevents slipping. Size 7½ by 11½ inches. Ship. weight, each, 1 pound.

61 C 3798—Each ... 15¢

Remember—Our Complete Guarantee Applies to Every Article in This Book

502 And on, to wit, the 29th day of September, 1939, came the Defendant Appellee by its attorneys and filed in the Clerk's office of said Court its certain Exhibits: A, C, E, G, H, I in words and figures following, to wit:

633 DEFENDANT'S EXHIBIT C.

Sheet No. ..... Account No. .....
Rating Credit Limit Name Soreng-Manegold Co.
Business Monroe 1741 Address 771 Mather St. Chicago

1926	Items	Folio	√		Debits
Oct.					
14	1 Die for #2658 Support	P16	A		$ 95.00
14	1 Die for #2655 Terminal	P16	A		90.00
14	1 Blanking die for #2660 Rotary Contact	P16	C		140.00
14	1 Forming die for Rotary contact	P16	A		80.00
14	1 Blanking die for #2654 Rotary Insulator	P16	C		115.00
16	1 Trimming die for brass stud	P16	B		23.30
16	Made changes on 1 Trim. Pierc. & Form die #2655	P16	B	$570.71	27.41
					570.71
16	Change 1 Fibre die, 60½ hrs. @ $1.27 Stamped 27,200 Fibre washers	P18	D	160.28	160.28
					730.99
Dec.					
2	1 Bench forming tool 74½ hrs. @ 1.75 = 130 38 plus material plus 10% on Mat.	P20	Σ		135.33
10	1 riveting and forming die	P20	F		92.05
17	57,504 fibre washers @ 1.05 per m. plus maintenance of die	P21	G	326.26	98.88
					1,057.25
31	Changed forming die for contact spring	P22	H	350.76	24.50
					1,081.75

Date	Items	Folio	√		Credits
Nov.					
4	Paid Check	C46	A		265.00
20	" "	C46	B		50.71
20	" "	C46	C		131.45
20	Deducted for mat we bought	C46	C		123.55
					570.71
Dec.					
18	Paid Check	C50	D		160.28
					730.99
					730.99

(Endorsed) Filed Sep 29 1939. Hoyt King, Clerk.

Account No. ..... Sheet No. .....

Name Soreng-Manegold Co. Rating Credit Limit

Address 771 Mather St. Business

1927	Items	Folio	√		Debits
	B. F.				$1,081.75
Feb.					
3	1 die for 3052 bakelite inserts	P26	I	$231.00	206.50
12	1 die for part #3053 top cap plus necessary changes made plus steel engraved stamp #94	P26	J	525.60	319.10
					1,607.35
Apr.					
28	1 Blank & Form Die #4058 & 1 Form Die 4058 Driver #306	P32	L		190.00
23	1 Cut-off & Form Die #4064 Fuse Clips #297	P31	K		150.00
28	1 Cut-off & Form Die for Fuse Holder	P32	L		150.00
					490.00
May					
5	1 Assembly Fixture #344	P33	L		160.41
5	Labor Extra Cut-off & Form Die Fuse Holder #346	√	L		66.94
12	1 Blank & Form Die #4075 Connector #362	P33	M	657.35	90.00
					807.35

June					
28	1 Blank & Piere Die pt. 4155-4156 #514	P38	N		250.00
28	1 Blank & Emb. Die pt. 4162 #515	√	N	375.00	125.00
					1,182.35
July					
30	1 Die Chg'd #650	P41	O	28.88	28.88
					1,211.23

1927	Items	Folio	√	Credits
	B. F.			$ 730.99
Jan.				
6	Paid Check	C54	E	135.33
11	" "	C54	F	92.05
24	" "	C54	G	98.88
				1,057.25
Feb.				
1	Paid Check	C58	H	24.50
				1,081.75
Mar.				
5	Paid Check	C64	I	206.50
14	Cr. Memo-allowance	P29	J	35.00
14	Paid Check	C64	J	284.10
				1,607.35
May				
25	Check	C78	K	150.00
June				
7	Check	C80	L	556.94
7	Cr. M. Inv. #344	P36	L	10.41
14	Check	C80	M	90.00
				807.35
July				
29	Check	C90	N	375.00
Aug.				1,182.35
31	Check	C96	O	28.88

634 DEFENDANT'S EXHIBIT E.

Sheet No..... Account No.....
Rating Credit Limit Name Electric Safety Devices Co
Business Address 11 S. Desplaines St.
Chicago, Ill.

1927	Items	Folio	√	Debits
Feb.				
9	Cartage charge on delivering tables, chairs and other equipment from your plan to 351 N. Crawford #74	P26	A	5.25
Oct.				
28		P49	A	94.75

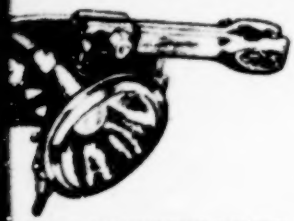
1927	Items	Folio	√	Credits
Oct.				
28	Check	C104	A	100.00

Defendant's Exhibit G

...ESSORIES (Contd.

...ITY ACCESSORIES CO ... 364

...is to be found a full range of Security ... includes a universal clip ... spotlight and driving mirror, ... Pearce a variety of step mats and ... rears, ashtrays and interior mirrors ... case. In addition there is a con... assortment of proprietary lines ... Pond Street, London, W.2.



...ed spotlight and driving mirror (Security Accessories).

...ORIOCE STOKES CENTRIFUGAL ...TINGS CO., LTD ... 345

...PLEX of centrifugal castings which are ... for piston-ring drums, cylinder liners ... valves, including three types which ... for various well-known engines, are ... the exhibit. Chesterfield.

...LMEE, LTD ... 229

...DEL of particular interest is one of ... features of the exhibits on this stand. ... of an engine so arranged as to ... the material how the petrol is actually ... how the oil lubricates the unexposed ... formation of carbon and what occurs ... ignition takes place. Motorists, ... new ones, who are not as yet fully ... nothing of an engine would do well ... this mode. They will also see ... petrol and oil equipment is sealed to ... obtaining these products undiluted. ... include the Shell oil cabinet ... Shell Corner, Kingsway, London, ...

...TOWN LUBRICANTS, LTD. ... 243

...ourse, well known as the refiners of ... oil have a working model of part ... Silvertown plant on exhibition, together ... model of a derrick, such as is used in ... in which the oil can be seen flowing ... derrick into a storage pump, being ... into the stills, thence to the re... and finally passing out as a refined ... ready for use. Other exhibits are a ... Speedview cabinet, containing a 50-... steel drum with a self-measuring pump ... types of packages as used for be... grades of Speedsilene.—Minoco Wharf, ... Road, London, E.16.

...O BALL BEARING CO., LTD. ... 173

...LECTION of the S.K.F. ball and roller ... for motorcar chassis applications, ... the S.K.F. single-row, deep-groove, ... ball bearing for general automo... and the single-row, cylindrical roller ... which is designed for dealing with ... at high speeds is shown. There ... include the taper roller bearing for ... and sterling pivot applications, and ... ball bearings for magneto, Lu... Ball Latch, Bolt ...

... AND PARKES, LTD ... 304

...ers, well known as the producers ... non-corrosive alloy metal ... and cast bronze, exhibit a range ... products they are showing at the com...

Smith single-acting shock absorber (Frank Smith).

...bolt and wing-nut. As the axle rises the arms move towards one another, and this movement acts upon the tension spring, thus allowing the band to slide freely round the drum, but on the rebound the arms separate and the brake drum rests round the drum, thus absorbing the excess of energy stored up in the car spring during the compression movement. Eland, Yorkshire.

...a motor-car brake at the base of the lighter, so that when the correct heat has been attained the current automatically cuts out. Thus it will be seen that the filament is intermittible. There are also cigarette compartments, ashes compartments, mounts and vases, together with various models of the great driver, windscreen wiper and direction indicator (Trafficator Co. Ltd., London, N.W.2.

THOMAS SMITH'S STAMPING WORKS, LTD. ... 389

HERE is shown a full range of cup leathers for all types of motor vehicles. Included are engine parts, chassis parts, steering and brake parts, etc.—Bilston Road, Wednesbury.

SNOWDON, SONS AND CO., LTD ... 259

ON this stand are shown the Bean spring motor cycle and sprayers in their various applications and the different types of packing employed.—Millwall, London, E.14.

SORBO RUBBER SPONGE PRODUCTS, LTD ... 256

SOME interesting exhibits made from the well known Sorbo sponge rubber are shown. They include "Starting" for car mats which is thick and springy to the tread and lies perfectly flat about the controls without rucking

Smith positively driven windscreen wiper with tandem attachment (S. Smith and Sons).

...or curling, and is supplied in eight different colouring effects there is also shown the Sorbo rubber sponge upholstery. This consists of strips of high-class sorbo sponge rubber interlaced and staggered, thus forming a buoyant and resilient seat. It can be made up to any desired shape for seats and squabs. There are also examples of Sorbo running board mats, cleaning sponges and brake silencers, which are claimed to deaden all squeaks and grating which occur sometimes when the brakes are applied.—Sorbo Works, Wearing.

SPECIALLOID, LIMITED ... 227

HERE is shown an extensive range of specialloid low-expansion aluminium alloy pistons, which are so arranged as not only to provide the maximum strength for the head, but also to give support to the skirt and

S. SMITH AND SONS (M.A.), LTD ... 467

ALWAYS a centre of interest on account of their elaborate array of attractive and well-made accessories exhibited, this year this stand is up to the same high standard and there are included some interesting new features. One of these is the Governor radiator shutter, which is controlled by thermostatic metal and operates entirely automatically. The shutter remains closed until the water has attained a certain degree of temperature, which occurs quickly on account of the fact that air is excluded from the honeycomb of the radiator, when it automatically opens and remains open so long as the water is above a predetermined temperature. In view of the fact that the shutters are automatic, however, the water is maintained at the correct temperature necessary in order to obtain the maximum efficiency and economy from an engine, as they open and close as the temperature of the water varies. They are neat in appearance and easily fitted. A range of bumpers is another recent addition, as is also the Smith-Blackman filter and an engine-driven tyre pump. Amongst other of the exhibits are a range of speedometers, in which many improvements have been incorporated, clocks of all types, the well-known Smith carburetters and the popular Windsor cigar lighter. The last-mentioned now incorporates a very useful improvement in order to prevent the lighting element being burnt out, owing to the switch being depressed for too long a period, a thermostatic metal has been introduced in such a manner as to form

44342

...ludes a ... spotlight and driving mirror, ... and fixes a variety of stop mats and ... rests, ashtrays and interior mirrors ... cars. In addition, there is a com... assortment of proprietary Lines ... 107, Pratt Street, London, N.W.1.

...ined spotlight and driving mirror (Security Accessories).

...PSIDGE STOKES CENTRIFUGAL CASTINGS CO., LTD. 345

...MPLES of centrifugal castings which are ... for piston-ring drums, cylinder liners ... sleeve mirrors, including three types which ... supplied for various well-known engines, con... the exhibit. Chesterfield.

...LMER, LTD. 220

...WORK of particular interest is one of ... features of the exhibits on this stand. ... pieces of an engine so arranged as to ... the material how the petrol is mutually ... and how the oil lubricates the unexposed ... the formation of carbon and what occurs ... preignition takes place. Motorists, ... any one else, who are not as fully ... the working of an engine would do well ... inspect this model. They will also see ... Shell petrol and oil equipment is sealed to ... their obtaining these products undiluted. ... exhibits include the Shell oil cabinet ... on Shell Corner, Kingsway, London, ...

...STOWN LUBRICANTS, LTD. . . 243

...ll experts, well known as the refiners of ... petroleum, have a working model of part ... Silvertown plant on exhibition, together ... a model of a derrick, such as is used in ... fields, in which the oil can be seen flowing ... the derrick into a storage pump, being ... pumped into the stills, thence to the re... plant and finally passing out as a refined ... part ready for use. Other exhibits are a ... piece Speed-lease cabinet, containing a 50-... set, from which a self-measuring pump ... various types of packages as used for the ... grades of Speedilease.—Minoco Wharf, ... Silvertown, London, E.16.

...PKO BALL BEARING CO., LTD. . . 173

...SELECTION of the S K F ball and roller ... bearings for motor-car chassis application, ... the S K F single-row, deep-groove, ... thrust ball bearing for general automo... work and the single-row, cylindrical roller ... which is designed for dealing with ... loading at high speeds, is shown. There ... also included the taper roller bearing for ... hubs and steering-pivot applications, and ... thrust ball bearings for magnetos.—Lon... Road, Luton, Beds.

...LL AND PARKES, LTD. 309

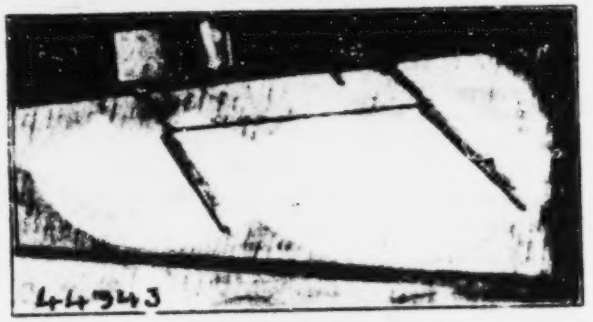
...ll's patents, well known as the producers ... the Ten Adhesion materials and non-metal... brake and clutch linings, exhibit a range ... their products that are showing in the com... ...ter and sealing heads and in sheets, etc. ... Asbestos metallic sheeting is available in ... any required width of lining can be cut ... patents also include floating rubber ... cylinder ring and so on. There are ... sets of brake liners made up for ... ...ll the well-known and popular cars.—Bond ... Ltd., Wythe, Manchester.

FRANK SMITH AND CO. (ELLAND) LTD. 284

...Smith shock absorber is the exhibit ... component on this stand. These are of the ... single-acting and friction type and consist of ... arms pivoted together, the extremities of ... which are connected to the chassis and the ... One connected with the chassis carries ... brake lever and the other an external brake ... which can be adjusted to any desired ... by means of a spring-loaded tensioning ...

Smith single-acting shock absorber (Frank Smith).

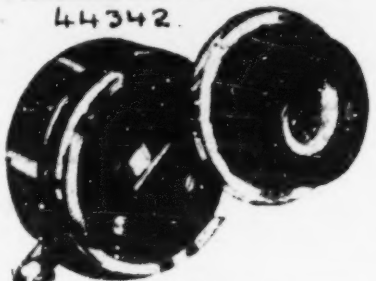
...left and wing-nut. As the axle rises the arms ... towards one another, and this movement ... upon the tension spring, thus allowing ... the hand to slide freely round the drum, but ... the rebound the arms separate and the brake ... rests round the drum, thus absorbing the ... of energy stored up in the car spring ... the compression movement.—Elland, ... Yorkshire.



Smith positively driven wind-screen wiper with tandem attachment (S. Smith and Sons).

S. SMITH AND SONS (M.A.), LTD. . 467

ALWAYS a centre of interest on account of their elaborate array of attractive and well-made accessories exhibited, this year this stand is up to the same high standard, and there are included some interesting new features. One of these is the Governor radiator shutter, which is controlled by thermostatic metal and operates entirely automatically. The shutter remains closed until the water has attained a certain degree of temperature, which occurs quickly on account of the fact that air is excluded from the honeycomb of the radiator, when it automatically opens and remains so, so long as the water is above a predetermined temperature. In view of the fact that the shutters are automatic, however, the water is maintained at the correct temperature necessary in order to obtain the maximum efficiency and economy from an engine, as they open and close as the temperature of the water varies. They are neat in appearance and easily fitted. A range of bumpers is another recent addition, as is also the Smith-Blackman filter and an engine-driven tyre pump. Amongst other of the exhibits are a range of speed-meters, in which many improvements have been incorporated, clocks of all types, the well-known Smith carburetters and the popular Wireless cigar lighter. The last-mentioned now incorporates a very useful improvement in order to prevent the lighting element being burnt out owing to the switch being depressed for too long a period, a thermostatic metal has been introduced in such a manner as to form



Smith improved wireless cigar lighter (S. Smith and Sons).

...wiper and ... section ... Works, London, N.W.2.

THOMAS SMITH'S STAMPING WORKS, LTD. 389

HERE is shown a full range of ... for all types of motor vehicles. Included ... engine parts, chassis parts, steering and ... parts, etc.—Ribble Road, Preston.

SNOWDON, SONS AND CO., LTD. . . 259

ON this stand are shown the Road Snow ... motor rims and sleeves in their various ... and the different types of jack ... employed.—Millwall, London, E.14.

SORBO RUBBER SPONGE PRODUCTS, LTD. 250

SOME interesting exhibits made from the well-known Sorbo sponge rubber are shown. They include "flooring" for car mats, which is thick and springy to the tread and lies perfectly flat about the controls without rucking or curling, and is supplied in eight different colouring effects; there is also shown the Sorbo rubber sponge upholstery. This consists of strips of high-grade Sorbo sponge rubber, interlaced and staggered, thus forming a buoyant and resilient seat. It can be made up to any desired shape for seats and squabs. There are also examples of Sorbo running-board mats, cleaning sponges and brake silencers, which are claimed to deaden all squeaks and grating which occur sometimes when the brakes are applied.—Sorbo Works, Woking.

SPECIALLOID, LIMITED. 227

HERE is shown an extensive range of Specialloid low-expansion aluminium alloy pistons, which are so arranged as not only to provide the maximum strength for the head, but also to give support to the crown and

Specialloid aluminium alloy piston showing the interior webbing.

...gudgeon pin bosses in a manner that completely eliminates distortion. There are also sections of pistons for touring and racing cars, together with specimens of rings and non-scoring gudgeon pins. There is a specially designed piston for Diesel aero-engine, this model being relieved circumferentially in line with the gudgeon pin holes to decrease the bearing surface and the friction produced by moving sleeves. There are also special provisions to prevent oil pumping and drain holes are provided from the waist grooves.—Park, North Finchley, London, N.12.

Defendant's Exhibit H

Defendant's Exhibit I

45 And on, to wit, the 14th day of April, 1939 came the Parties by their attorneys and filed in the Clerk's office of said Court their certain Stipulation in words and figures following, to wit:

46 IN THE UNITED STATES DISTRICT COURT. Filed Apr. 14, 1939.
* * (Caption—16188) * *

STIPULATION.

It Is Hereby Stipulated by and between the parties of the above entitled suit, as follows:

A photostat of Page 658 of the October 18, 1927 issue of "The Motor" (a British magazine) may be admitted as Defendant's Exhibit G, with the same force and effect as though the publication was offered at the time of the trial, subject to plaintiff's objection of immateriality.

Bernard A. Schroeder,
Of Counsel for Defendant.
Henry M. Huxley,
Of Counsel for Plaintiff.

Dated: April 14, 1939.

47 And afterwards, to wit, on the 28th day of June, 1939, being one of the days of the regular June term of said Court, in the record of proceedings thereof, in said entitled cause, before the Honorable William H. Holly, District Judge, appears the following entry, to wit:

48 IN THE UNITED STATES DISTRICT COURT. Filed June 28, 1939.
* * (Caption—16188) * *

MEMORANDUM.

Plaintiff by its bill and the supplement thereto charges defendant with having infringed three patents for automatic cigar lighters owned by it, Mead, No. 1,736,544, Johnson, No. 2,129,374 and Cohen, No. 2,140,311. Defendant answered denying the validity of the patents.

Plaintiff, a patent holding company, issued a license to Casco Products Corporation authorizing it to manufacture and sell cigar lighters embodying the inventions embodies in the patents. Defendant also manufactures and sells

cigar lighters, which it is charged, infringe plaintiff's patents.

The cigar lighters produced by Casco Products Corporation and defendants are designed for use on automobiles. Their general operation is the same. In each a plug is inserted in a socket. In the normal position there is no electrical connection between the plug and the socket.

When it is desired to use the lighter the plug is pushed in to establish a conection. It remains in that position until the heating coil has become sufficiently heated to light a cigar or cigaret, whereupon by means of a thermostat a spring causes the plug to move outwardly and the connection is broken.

First, as to the Mead patent, No. 1,736,544, counsel lists claims 2, 3, and 11 as typical. Those claims are as follows:

"2. In a device of the class described, a removable heating member having an electrical heating unit, a socket for receiving and holding said heating member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and means responsive to the temperature of said heating unit for interrupting said energizing circuit.

"3. In a lighting device for cigars and the like, a removable heating member having an electric heater, a support for receiving and holding said heating member, current supply terminals on said support, said heating member being movable on said support to a position where said heating unit is energized from said terminals and means responsive to the temperature of said heating unit for controlling the heating thereof.

"11. In an electric lighter of the class described, a base member, a heater member movably mounted on said base member, an electric heater on said heater member, electrical supply terminals on said base member, said heater member being movable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, and automatic means for withdrawing said heater member from the on position to the off position upon heating of said heater."

Broadly speaking, as the matter is stated in plaintiff's brief, (p. 9),

"The Mead patent is directed to a wireless cigar lighter

having the holding device and removable igniter unit, the circuit closing contact of the latter being adapted to be moved into circuit closing position and there automatically held until such times as the resistance coil reaches the proper temperature, whereupon the circuit is automatically opened by movement of the contact carried by the plug or igniter unit, and the latter may then be removed for lighting a cigar or cigarette."

Cigar lighters of various kinds have been used on automobiles for many years. The first of the wireless consisted of a socket and plug. With the plug in normal position there was no electrical connection. When it was desired to use the device the operator would push in the plug to establish the connection and hold it there until the igniting unit had become sufficiently heated to light the cigar. Mead was the first in this country to produce an automatic device in which the members were brought into the proper connection and held there until the igniting unit was properly ignited and the connection was then automatically broken. The essential features of the device, as it appears to me, were the combination of the spring and the thermostatic device in a cigar lighter and this combination I think revealed invention. Defendant's device and the devices covered by the Cohen patent No. 2140,311 and Johnson patent No. 2,129,374, were merely improvements and refinements upon the Mead invention which would naturally be developed by those skilled in the art.

Defendant introduced in evidence various patents as showing the state of the art prior to Mead's patent 51 but in the brief relies principally on the Copeland patents Nos. 1,844,206 and 1,838,363. These patents do not perform the same service, nor operate in like manner as the invention of Mead.

I do not feel that I need to further consider the Johnson or Cohen patents mentioned in the complaint. They are not, in my opinion, in any patentable respect, different from Mead.

Plaintiff is entitled to a decree as prayed in its complaint.

Holly,
Judge.

June 28, 1939.

52 And on, to wit, the 6th day of July, 1939 came the Defendant by Their attorneys and filed in the Clerk's office of said Court Their certain Petition for Rehearing on Questions of Infringement of Mead Patent No. 1,736,544 in words and figures following, to wit:

Filed July 6, 1939.

53 IN THE UNITED STATES DISTRICT COURT.

* * (Caption—1C188) * *

DEFENDANT'S PETITION FOR REHEARING ON QUESTION OF INFRINGEMENT OF MEAD PATENT NO. 1,736,544.

Defendant respectfully petitions the Court to grant a rehearing with respect to the Memorandum holding that defendant infringes Mead Patent No. 1,736,544, for the following reasons:

1. The Memorandum decision by the Court, dated June 28, 1939, contains certain statements of fact which we respectfully submit are erroneous and we feel sure that the Court will want to correct these matters of fact after further consideration. As the particular facts referred to are essential to support the decision, a rehearing limited to those facts is believed to be eminently desirable for the Court and the parties concerned.

2. In the first paragraph of the Memorandum it is indicated that the defense of the three patents is invalidity. Defendant's primary defense to the Mead patent is non-infringement. (See paragraph 2 of the original answer and paragraph 2 of the answer to the supplemental bill of complaint.)

54 3. In paragraph 3 of the Memorandum the operation of the Casco lighter and defendant's lighter is described in detail and it is stated, "In the normal position there is no electrical connection between the plug and the socket". We submit that both parties will agree that in the Casco device there is one electrical connection between the plug and the socket when in normal position and that in defendant's device there are two electrical connections between the plug and the socket, these connections in defendant's device remaining unchanged whether the thermostatic switch is closed or open.

4. On page 3 of the decision it is stated that, "The essential features of the device, as it appears to me, were

the combination of the spring and the thermostatic device in a cigar lighter and this combination I think revealed invention". Plaintiff urged that Mead did not claim the broad combination of a thermostat in a wireless cigar lighter but was limited to "the special combinations". (See page 28 of plaintiff's main brief.) A study of defendant's briefs will reveal that defendant did not urge that the Mead patent be declared invalid for want of invention but on the contrary urged that it must be construed in accordance with Mead's contribution to the art and that as defendant does not use the "special combinations" specified in the claims, there is no infringement.

55 **Remarks.**

As the Court fully understands, validity and infringement are two wholly separate defenses and if either one is established it is a complete defense to a patent suit.

No matter how broad the underlying invention may be, express limitations in the claims must be given full weight. Much of defendant's brief and oral argument concerning the prior art was for the purpose of showing that the limitations relied upon by defendant had to be included by Mead to distinguish from the prior art and that the scope of the patent is too narrow to cover defendant's device. The limitations relied upon by the defendant were more fully discussed in defendant's briefs than in the final argument.

Unfortunately, the Court, due to the heavy burden cast upon it by other litigation, did not have an opportunity to read the briefs before the final argument and accordingly we fear that defendant's position at the oral argument was not perfectly clear in connection with the Mead patent.

In the Mead device and in Casco's commercial lighter, when the plug is inserted in the socket and is in its normal position, there is one electrical connection between the plug and the socket member. The circuit is closed by bringing an additional contact on the plug member into engagement with the contact on the socket 56 member. In defendant's device, on the other hand, when the plug is inserted into the socket, the plug makes two electrical connections with the socket member and these connections remain whether the electrical switch in the plug member is open or closed. The claims in the Mead patent, of course, are directed to the Mead con-

struction and have definite limitations to these features. It is defendant's position that the Mead claims can be read upon the Casco construction but do not read upon defendant's construction. This specific question of infringement was carefully considered not only by defendant's attorneys but by the patent department of General Motors Corporation and several other large automobile manufacturing companies. These outside and independent concerns fully agree with defendant's contentions.

The Johnson and Cohen patents, which were held invalid, required much detailed discussion of facts and questions of law that did not apply to the Mead patent. For example, we argued that the Johnson and Cohen patents should be held invalid under the Lincoln Engineering case, while we stated specifically that the Mead patent claims were all right under the Lincoln Engineering case and properly included the socket member as part of the patented combination. Sinko's reduction to practice in 1933 was discussed because it invalidated the Johnson patent, and certain other questions such as late insertion of claims applied to the Cohen patent but not the Mead patent. The principal and primary defense as to the Mead patent, as will be clear from defendant's briefs, was non-infringement and we did not urge
57 that the patent be held invalid for lack of invention.

Plaintiff, on the other hand, gave the mistaken impression that defendant was merely taking the position that there could be no invention in the use of a thermostat with a cigar lighter because it is old to use thermostats in other types of heating appliances. At no time was this defendant's contention.

On page 8 of plaintiff's reply brief it is stated: "We cannot see that defendant has made any sound argument leading to a logical conclusion of invalidity in the present case". This statement is true so far as the Mead patent is concerned because our argument was on non-infringement and not invalidity.

It seems manifest that the Court has taken the position that if there was invention in Mead defendant infringes. The facts on which the Court must have based its implied finding of infringement apparently were not made clear by the briefs or oral argument. Now that the issue is clearly drawn, we submit that it is only fair to the Court to have these facts made perfectly clear so that if the Court desires to make any corrections in its Memorandum

it may do so, and in the event that an appeal by either side is necessary, the basis of the decision will be perfectly clear on the facts.

We realize that the Court has been very patient in listening to the evidence in the three suits on cigar lighters involving some sixteen patents, in reading the rather voluminous briefs, and in passing on the many
58 questions involved. The difficulty in following the facts simultaneously in so many detailed questions is apparent to anyone and the Court is entitled to all the aid that counsel can give in keeping the facts straight, particularly the present ones which we believe are agreed upon by both parties. We trust that a short rehearing, at the Court's convenience, will verify these points and facilitate the Court entering a decree which will correctly and fairly express the Court's views with full knowledge of the pertinent facts.

Respectfully submitted,
Chritton, Wiles, Davies, Hirschl & Dawson.

Russell Wiles,
Bernard A. Schroeder,
George A. Chritton.
Counsel for Defendant.

State of Illinois, } ss.
County of Cook. }

Bernard A. Schroeder, being first duly sworn, on oath deposes and says he has read the foregoing petition for rehearing; that the facts stated therein are true; and that the petition is well-founded and not interposed for the purpose of delay.

Bernard A. Schroeder (sgd.)

Subscribed and sworn to before me this 5 day of July, 1939.

H. Picchietti, (sgd.)
Notary Public.

59 And afterwards, to wit, on the 6th day of July, 1939, being one of the days of the regular July term of said Court, in the record of proceedings thereof, in said entitled cause, before the Honorable William H. Holly, District Judge, appears the following entry, to wit:

Entered July 6, 1939.

60 In the District Court of the United States.

* * (Caption—16188) * *

Thursday, July 6th, A. D. 1939.

Present: Hon. William H. Holly, District Judge.

On motion of defendant's attorney it is

Ordered that leave be and the same is hereby given defendant to file instanter petition for a rehearing on question of infringement of Mead Patent and said petition is taken under advisement and leave be and the same is hereby given parties to file additional memorandum.

Filed Oct. 5, 1939.

61 And on, to wit, the 5th day of October, 1939 came the Defendant by its attorneys and filed in the Clerk's office of said Court its certain Memorandum in Support of the Petition for Rehearing on Question of Infringement of Mead Patent No. 1,736,544 in words and figures following, to wit:

62 In the United States District Court.

* * (Caption—16188) * *

DEFENDANT'S MEMORANDUM IN SUPPORT OF ITS PETITION FOR REHEARING ON QUESTION OF INFRINGEMENT OF MEAD PATENT NO. 1,736,544.

At the hearing, July 6, 1939, the Court requested that the parties file a very short memorandum setting forth their contentions regarding the defendant's petition.

The Court indicated that it clearly understood that defendant's principal defense as to the Mead patent was non-infringement, rather than invalidity, and accordingly that need not be discussed further.

The Court also made it perfectly clear that it was the Court's view that Johnson Patent No. 2,129,374 and Cohen Patent No. 2,140,311 are invalid for lack of invention over the prior art.

63 The only remaining point concerns paragraph 3 of the Court's Memorandum relating to the structure and operation of the Mead device, the device manufactured by Casco, and defendant's device. We stated in the

petition that the parties agreed upon the facts. In other words, there is no dispute as to the structure and operation. We submit that this was true in the testimony, briefs, and final argument, but at the hearing today plaintiff's counsel did not agree and stated that the description of the operation in the Memorandum by the Court is "absolutely correct".

The Court in describing Casco's device said, "In the normal position there is no electrical connection between the plug and the socket. When it is desired to use the lighter, the plug is pushed in to establish a connection."

It is defendant's contention, and we submit it is borne out by the description in plaintiff's main brief, (see last three lines on page 9 through line 7 at the top of page 11) that the Mead device operates as follows: When the Mead plug or heating member is inserted in the rotary socket, one end of the heating coil is in electrical connection with the socket member. This is the normal
64 position. When it is desired to use the lighter, the plug is rotated bringing its other contact into electrical connection with the other socket contact. As the coil heats up, the thermostat in the base of the socket, which also acts as a spring, turns the plug back into normal position so that the circuit is broken and only one contact on the plug remains in engagement with one contact on the socket. This will be clear by reference to the colored sheet 1 of plaintiff's main brief.

In the Casco commercial device, illustrated in sheet 4 of plaintiff's main brief, when the heater member or plug is in its normal position in the socket, as shown in Figure B, one contact of the plug is in electrical connection with the socket member. When it is desired to use the lighter, the plug is pushed in to the position shown in Figure C and the other contact is brought into engagement with the thermostatic contact in the base of the socket. When the thermostat opens up, a spring on the outer end of the plug pulls the heater member back into the normal position shown in Figure B, but the plug still remains with one contact in electrical engagement with the socket.

In defendant's device, also illustrated on colored sheet
1 of plaintiff's main brief, the arrangement
65 is wholly different from either the Mead disclosure or the Casco device. When defendant's heater member or plug is in its normal position in the socket, as shown in Figure B, one contact of the heater member is in electrical connection with the socket member and the

other contact is in electrical engagement with a contact in the base of the socket. When it is desired to use the lighter, the knob portion or push button is pressed inwardly, closing a switch wholly within the plug member, as shown in Figure C. When the thermostat releases, the push button springs back into the normal position shown in Figure B, but the plug member remains with its two contacts in electrical connection with the two contacts in the socket member.

From the above it will be clear that in normal position the heater member of Mead and the heater member of Casco's device have but one electrical connection with the socket member. Defendant's device, on the other hand, in normal position always has the two contacts on the plug member in electrical engagement with the two contacts in the socket member. This is true whether the thermostatic switch in the plug is open or closed.

66 We submit that these structural differences are of the greatest importance in passing on the question of infringement because in each of the three claims relied upon it is clearly specified that the heating member, i. e., the plug, is movable between an energized position where the circuit is established and an off position where the circuit is broken. Defendant's heater member does not move. Mead's heating member and Casco's heating member do move as specified in the claims.

Plaintiff has urged to this Court that even though defendant's heating element and body of the plug do not move, the push button can be called the "heater member". We submit that this position is clearly untenable and is directly contrary to the plain import of the claims and disclosure of the patent. The claims of the Mead patent are discussed on pages 10-13 of defendant's main brief.

Plaintiff argued that it does not make any difference that only the push button moves in defendant's device and that the active part of the heater member, i. e., the resistance coil and body of the plug do not move. This Court may recall that this is exactly the same position that plaintiff Casco took in the 15,336 case in urging

67 that defendant's manual type of standard equipment lighter infringed claim 20 of Copeland Patent No. 1,919,159. In Copeland the golf ball body and heating element or translator moved as a unit. In defendant's device, as here, only the handle portion moved and the heating element or translator did not move. The Court of Appeals in 89 Fed. (2) 916 rejected plaintiff's contention and after reciting claim 20 said:

"In the art with which we are now concerned a translator is a heater. Consequently the resistance element is the active part of the translator. So, when the claim apparently distinguishes a translating unit from a resistance element, it must be interpreted as including both as one, for the resistance element is the active part of the translator. With this explanation in mind, upon examination of the claims and application of appellant's device and comparison of the same with Zecchini, keeping in mind the resulting limitations, it is very doubtful, to say the least, whether appellant infringes."

In other words, on this identical question, the Court of Appeals held that when speaking of a translator (or heating member) it must be interpreted as including the resistance member because it "is the active part of the translator" (heating member). Accordingly, it is defendant's position, relying on the decision of this Court and the Court of Appeals in the 15,336 case, that when a claim specifies that the heating member moves to close
68 the circuit, the claim cannot mean anything but that the heating element moves with the handle because it is the active part.

It seems clear that if the structural limitations in the claims, discussed above, are disregarded, the Mead patent will be expanded far beyond its original import and plaintiff will have a complete monopoly on any wireless cigar lighter having a thermostatic switch. Even if the claims did not have such limitations, we submit that Mead was not entitled to such a broad monopoly because the prior art (Copeland Patent No. 1,838,363 and Patent No. 1,844,-206) showed the use of push button thermostatic switches in connection with cigar lighters.

Defendant feels confident that the Court will want to correct its description of the automatic lighters of Casco and defendant. It is hoped that with a clear statement of the structure that the Court will hold that the claims are not infringed by defendant, or, if the facts are still not clear, that a short rehearing will be granted to clear up any questions which the Court has.

Respectfully submitted,
Chritton, Wiles, Davies, Hirschl & Dawson.

Russell Wiles,
Bernard A. Schroeder,
George A. Chritton,
Counsel for Defendant.

69 And on, to wit, the 5th day of October, 1939, came the Plaintiff by its attorneys and filed in the Clerk's office of said Court its certain Memorandum in Opposition to Defendant's Petition for Rehearing on Question of Infringement of Mead Patent No. 1,736,554 in words and figures following, to wit:

Filed Oct. 5, 1939.

70 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption—16188) * *

PLAINTIFF'S MEMORANDUM IN OPPOSITION TO DEFENDANT'S PETITION FOR REHEARING ON THE QUESTION OF INFRINGEMENT OF MEAD PATENT NO. 1,736,554.

This Memorandum is filed pursuant to the request of the Court made on the occasion of the oral hearing on the defendant's Petition for Rehearing.

Plaintiff objects to and opposes defendant's petition on the ground that the Court's Memorandum Decision dated June 28, 1939, does not contain erroneous statements of fact nor statements which in any way need correction or modification, as alleged by the defendant. This is the sole ground urged by the defendant in support of its petition.

The first paragraph of the petition alleges merely that the Court's Memorandum contains erroneous statements of fact, but for the reasons hereinafter more specifically pointed out in answering the other paragraphs of the petition it will appear to the Court that the Memorandum is entirely accurate in all statements of fact as well as in the conclusions that the claims in issue of the Mead

71 patent are valid and infringed by the defendant's cigar lighter. The plaintiff denies that the Memorandum contains any such alleged errors and, as will be later shown, this first paragraph affords no basis whatsoever for granting the defendant's petition.

The first alleged error of fact referred to by the defendant is set forth in paragraph 2 of the petition, which states—

"In the first paragraph of the Memorandum it is indicated that the defense of the three patents is invalidity. Defendant's primary defense to the Mead patent is non-infringement."

The defendant here refers to the statement at the end

of the first paragraph of the Memorandum where the Court, after referring to the Mead, Cohen and Johnson patents, said—

"Defendant answered denying the validity of the patents."

This statement of the Court is entirely accurate and obviously refers to the fact that the question of validity of the Mead patent was put in issue by the pleadings and, irrespective of the contentions of the defendant in its briefs and oral arguments, the question of validity was necessarily decided in this case in view of the Court's finding of infringement. Paragraph 12 of the original answer and paragraph 9 of the answer to the supplemental complaint both deny the validity of the Mead patent, and therefore the statement by the Court, which refers to the defendant's answer, is the only accurate statement that could be made. Having found the Mead patent valid, the result is the same irrespective of whether the Court reached this conclusion after a contest on validity or as a result of the defendant not contesting the validity.

Having found the Mead patent valid, it was then necessary for the Court to pass upon the question of infringement. The issue of non-infringement was also raised
72 by the pleadings and was strenuously argued in the briefs as well as orally. The defendant has repeatedly presented its position of non-infringement to the Court and it is perfectly apparent from the Memorandum that the Court understood the defendant's position and gave full consideration to the defense of non-infringement. This ruling is found in the decision of the Court that plaintiff is entitled to a decree as prayed for in the complaint in so far as the Mead patent is concerned. Furthermore, the statements contained in the Memorandum clearly show that the Court found that the defendant's construction infringed the claims in issue of the Mead patent. For instance, at the bottom of page 1 of the Memorandum, the Court said—

"The cigar lighters produced by Casco Products Corporation and defendants are designed for use on automobiles. *Their general operation is the same.*" (Emphasis ours.)

Here, the Court held that the defendant's device embodies all of the essential elements of the Mead construction and operates in all essential principles in the same manner as Mead.

Later, on page 3 of the Memorandum, the Court defined the nature of Mead's invention as follows:

"Mead was the first in this country to produce an automatic device (a wireless cigar lighter) in which the members were brought into the proper connection and held there until the igniting unit was properly ignited and the connection was then automatically broken." (Parenthesis ours.)

This statement is entirely accurate and, in view of the scope of Mead's claims, the Court was obliged to hold that the claims in issue are infringed by the defendant's construction. Furthermore, the Court again stated its position as to infringement near the bottom of page 3 of the Memorandum, as follows:

73 "Defendant's device and the devices covered by the Cohen patent No. 2,140,311 and Johnson patent No. 2,129,374, were merely improvements and refinements upon the Mead invention which would naturally be developed by those skilled in the art."

The intention of the Court here expressed is entirely apparent, as it grouped the defendant's device with those of the Johnson and Cohen patents and held that they were all substantially the same in principle and construction as that covered by the Mead claims in suit.

The defendant's allegation contained in the third paragraph of the petition is directed toward the statement contained in the Memorandum at the bottom of the first page, where the Court said—

"In the normal position there is no electrical connection between the plug and the socket."

The defendant alleges that both parties will agree that in the Casco device there is one electrical connection between the plug and the socket when in normal position and that in defendant's device there are two electrical connections between the plug and the socket in normal position. The plaintiff does not agree with the defendant's allegation for the reason that the defendant is attempting to make a highly technical and improper distinction between making a contact between two metal parts on the one hand, and making an "electrical connection" on the other hand. There is nothing mysterious about the expression "electrical connection", and as employed in the Memorandum it is entirely correct. Obviously, this expression means that a connection is made which will permit the electrical current to flow through the socket and

plug in a manner to heat the heating element. The
74 Court very properly employed this language as it accurately defines the similarity between the constructions and operations of the device of the Mead patent and those of the defendant's lighter. It is recognized that there are unimportant structural details which are not vital to the question of infringement between the Mead disclosure and the defendant's lighter, but the Court very properly considered these differences as unimportant and pointed directly to the fundamental of the two lighters, namely, that in the normal position there is no flow of electric current between the plug and the socket. The Court's position in this regard is entirely clear from the sentences which followed the criticised statement, which read—

"When it is desired to use the lighter the plug is pushed in to establish a connection. It remains in that position until the heating coil has become sufficiently heated to light a cigar or cigaret, whereupon by means of a thermostat a spring causes the plug to move outwardly and the connection is broken."

The features which are common to the Mead invention and the defendant's lighter could not be more accurately stated.

It is therefore submitted that the allegations of paragraph 3 of the petition do not provide any basis for a rehearing on the question of infringement.

Referring now to paragraph 4 of the petition, it will be noted that the defendant urges that the Court's statement of the essential features of the Mead device is broader than that contended for by the plaintiff. Defendant attempts to substantiate its position by referring to the statement in plaintiff's main brief, at page 28. In its brief plaintiff stated—

"The plaintiff has no patent which simply claims using a thermostat in a cigar lighter, but it does claim in connection with the Mead and other patents the special combinations which we have described and in which a thermostat is one element, cooperating with the other elements of the combinations to produce the new and useful
75 results and advantages characterizing these patents and present in the defendant's accused cigar lighter."

There is no doubt but what the Court has fully understood the plaintiff's position with respect to the combination claimed in the Mead patent, and as pointed out in the brief and re-stated now, the plaintiff's position is that

the Mead patent covers the various elements of a wireless cigar lighter in a combination which includes a spring and a thermostatic device. This is exactly the combination which is referred to and defined by the Court in the statement of its Memorandum and in which the Court referred specifically to the combination of the spring and the igniting unit as the novel elements which produced a new and patentable combination. The defendant cannot successfully urge that the Court's statement as to the nature of the combination is in any way erroneous or in any way needs revision.

All of the remarks made by the defendant in support of its petition are mere repetitions of the arguments which have been fully presented to the Court both in the briefs and orally at the time of the hearing. Plaintiff wishes to point out, however, that the opening paragraph of defendant's remarks in its petition may be somewhat misleading in view of the fact that complete accuracy would require the word "validity" in the first line to be changed to "invalidity" and the word "infringement" in the second line to be changed to "non-infringement". It is fundamental that if a Court finds a patent valid, it must also pass upon the question of infringement, exactly as the Court did in this case.

When considering the petition as a whole, it is apparent that the defendant is seeking this rehearing for the purpose of attempting to persuade the Court to change its decision on the question of infringement. In other
76 words, the defendant is now attempting, without justification or legal grounds, to induce this Court to modify its decision on the question of infringement. This is evident from the fact that the decision is not only entirely correct as to the Mead patent and needs no modification, but if some amplification of the Court's position is desired by the defendant this could be accomplished by the findings of fact and conclusions of law to be entered herein.

As above shown, there is no error in the Memorandum decision of the Court as alleged by defendant, but even assuming for the purpose of argument that some amplification or re-statement of the Court's position is desired by the defendant, it is respectfully submitted that the denial of this petition is not inconsistent with substantial justice. The Court has found the Mead patent valid and infringed, and the defendant has not shown any grounds for modification of this decision, and consequently the

issues raised by this petition come directly under the provisions of Rule 61 of the new Civil Practice Rules. This Rule provides—

"No error in * * * any ruling or order or in anything done or omitted by the Court * * * is grounds for granting a new trial * * * unless refusal to take such action appears to the Court inconsistent with substantial justice."

Rule 61 refers to petitions of the type here involved, as under the new Civil Practice Rules rehearings are now provided for by Rule 59 relating to new trials.

It is therefore respectfully submitted that the petition should be denied.

Respectfully submitted,
J. P. Hume,
Counsel for Plaintiff.

77 Note: Plaintiff is submitting herewith Findings of Fact and Conclusions of Law and a Decree conforming to the Memorandum decision of the Court. It is believed that defendant's desire to have the position of the Court amplified has been satisfied by the Findings of Fact and Conclusions of Law submitted herewith.

Receipt of a copy of the foregoing Memorandum and a copy of the Findings of Fact and Conclusions of Law and the Decree filed herewith, is hereby acknowledged this 6th day of July, 1939.

B. P. Schroeder,
Counsel for Defendant.

78 And afterwards, to wit, on the 11th day of July, 1939, being one of the days of the regular July term of said Court, in the record of proceedings thereof, in said entitled cause, before the Honorable William H. Holly, District Judge, appears the following entry, to wit:

79 IN THE UNITED STATES DISTRICT COURT. Filed July 11, 1939.
* * (Caption—16188) * *

MEMORANDUM.

The memorandum heretofore filed herein is modified by changing the last sentence of the first paragraph to read: Defendant answered denying the validity of the patent and denying infringement.

Paragraph three may be modified by substitutig in place of the words, "In the normal position there is no electrical connection between the plug and the socket" the words, "In the normal position there is no effective electrical connection between the plug and the socket."

Otherwise the memorandum may stand as filed.

Holly,
Judge.

July 11, 1939.

80 And afterwards, to wit, on the 14th day of July, 1939, being one of the days of the regular July term of said Court, in the record of proceedings thereof, in said entitled cause, before the Honorable William H. Holly, District Judge, appears the following entry, to wit:

81 IN THE DISTRICT COURT OF THE UNITED STATES.

Filed July 11, 1939.

* * (Caption—16188) * *

FINDINGS OF FACT AND CONCLUSIONS OF LAW.

Findings of Fact.

1. That plaintiff, The Automatic Devices Corporation, is a Connecticut corporation and has its principal place of business at Bridgeport, Fairfield County, Connecticut.

2. That defendant, Sinko Tool and Manufacturing Company, is an Illinois corporation and has its principal place of business at Chicago, Cook County, Illinois.

3. That plaintiff, The Automatic Devices Corporation, is vested with all right, title and interest in and to the following Letters Patent of the United States in suit: No. 1,736,544 granted on November 19, 1929, for Cigar Lighter, on the invention of Herbet E. Mead, No. 2,129,374, granted on September 6, 1938, for Electric Cigar Lighter, on the invention of Arthur A. Johnson, and No. 2,140,311, granted on December 13, 1938, for Cigar Lighter, on the invention of Joseph H. Cohen.

82 4. That plaintiff has given and granted to Casco Products Corporation, a Connecticut corporation having its principal place of business at Bridgeport, Fairfield County, Connecticut, a non-exclusive license to manufacture, use and sell devices made according to and embodying the inventions of said Letters Patent No. 1,736,544, No.

2,129,374 and No. 2,140,311, and that said license is now in full force and effect.

5. That Casco Products Corporation has manufactured and sold a large number of cigar lighters made according to and embodying the invention of said Letters Patent in suit No. 1,736,544, granted on the invention of Herbert E. Mead.

6. That in wireless cigar lighters of the prior art, no electrical circuit was established through the heating element when the plug was in normal position in the socket. That when it was desired to use the cigar lighter it was not only necessary for the operator to manually move the plug, or a part thereof, in the socket to establish an electrical connection through the heating element, but also to manually hold the plug, or a part thereof, in such position until the heating element became sufficiently hot to light a cigar or cigarette.

7. That Mead was the first in this country to produce an automatic wireless cigar lighter in which the members are brought into the proper connection and held there automatically until the heating element is properly heated, and the connection is then automatically broken, the essential feature of the Mead combination being the spring and the thermostatic device.

83 8. That defendant's device is also an automatic wireless cigar lighter in which the members are brought into proper connection and held there automatically until the heating element is properly heated, and the connection is then automatically broken, the essential feature of the defendant's combination being the spring and the thermostatic device.

9. That in defendant's device the wireless plug has two electrical contacts which are normally in electrical engagement with two contacts on the socket member. The circuit is closed by a thermostatic switch, wholly within the plug member, by pressing a knob inwardly. Operation of the thermostatic switch in no way breaks the two electrical engagements between the removable plug member and the socket member. In defendant's device the heating unit and that portion of the plug which carries the heating unit do not move during the operation of the switch.

10. That in defendant's device the spring which normally tends to open the circuit, instead of being in the socket as in Mead, is in the plug, and the thermostatic latch, instead of being in the socket as in Mead, is in the plug, but the functions of maintaining the circuit normally open,

keeping the circuit closed until the heating element is hot enough for use, and then automatically opening the circuit, are precisely the same in defendant's device as in the Mead patent in suit.

11. That Letters Patent set up by defendant, No. 1,844,206 and No. 1,838,363, to Copeland, do not perform the same service and they do not operate in the manner of devices of Letters Patent in suit No. 1,736,544, granted on the invention of Herbert E. Mead.

84 12. That cigar lighters of the defendant, which are charged to infringe, are made according to and embody the inventions of claims numbered 2, 3 and 11 of Letters Patent in suit No. 1,736,544, granted on the invention of Herbert E. Mead, and therefore infringe upon the same.

13. That defendant's device and the devices covered by the Cohen Letters Patent No. 2,140,311 and the Johnson Letters Patent No. 2,129,374 were merely improvements and refinements upon the Mead invention which would naturally be developed by those skilled in the art.

14. That Letters Patent in suit No. 1,736,544, granted on the invention of Herbert E. Mead, is for a meritorious invention and is valid, particularly as to claims numbered 2, 3 and 11 thereof.

15. That claims numbered 2, 3 and 11 of Letters Patent in suit No. 1,736,544, granted on the invention of Herbert E. Mead, are not anticipated by the prior art.

16. That the invention of Mead as disclosed in Letters Patent in suit No. 1,736,544 is not anticipated by either of the patents to Copeland No. 1,838,363 and No. 1,844,206.

17. That Letters Patent in suit No. 2,129,374, as to claims numbered 1, 3, 4, 5 and 7 thereof, do not differ in patentable respect from Letters Patent in suit No. 1,736,544, granted on the invention of Herbert E. Mead.

18. That Letters Patent in suit No. 2,140,311, as to claims numbered 3 and 14 to 26, both inclusive, do not differ in patentable respect from Letters Patent in suit No. 1,736,544, granted on the invention of Herbert E. Mead.

85 19. That Mead Patent No. 1,736,544 discloses at least three modifications wherein a wireless cigar lighter plug is mounted to be rotated into circuit closing position and held there until the circuit is opened with the action of the thermostat. No drawings or models made prior to Mead's filing date, other than Exhibit 31, corresponding to any of these forms were offered in evidence.

20. That Mead, with the backing of the Jessop Company undertook to market a rotary wireless lighter with a ther-

mostatic control. Plaintiff's witnesses said that it was not reliable in operation and was not acceptable to automobile manufactures.

21. That the rotary wireless lighter with the thermostatic control which Mead, with the backing of the Jessop Company undertook to market was adopted by Montgomery Ward & Company and was shown in their 1928-1929 catalog; and as a result thereof, possibly 1500 or 2000 lighters were sold.

22. That plaintiff's licensee, Casco Products Corporation, was familiar with the Mead device in 1929 and had to make endless numbers of samples before marketing its commercial lighter in the fall of 1936.

23. That the numerous samples of cigar lighters made by Casco Products Corporation embodying the Mead invention between 1929 and 1936, were made for the purpose of culling out the less advantageous features and ultimately producing a commercially perfect device.

24. That the commercial cigar lighter sold by plaintiff's licensee Casco, is not of the rotary type and the circuit
86 is closed through the heating unit by pressing the body of the plug with the heating unit inwardly so that its contact is forced into the jaws of a thermostat in the socket member. When the thermostat is opened, the body of the plug with the heating unit is withdrawn from closed circuit position by an ejector sleeve and spring carried by the body of the plug.

25. That the cigar lighters illustrated in the Mead patent each have a wireless plug which is normally carried in a rotary socket member with one contact on the plug in electrical engagement with a socket contact. The circuit is closed by rotating the plug together with the rotary portion of the socket until the second contact on the plug member engages a second contact on the base.

26. That the Casco device, licensed under the Mead patent, normally has its wireless plug with one contact in engagement with one contact of the socket member. To energize the device the body of the plug, together with its heating unit, is thrust inwardly bringing the second contact on the plug member into electrical engagement with the second thermostatic contact in the base of the socket.

27. That although plaintiff's licensee Casco, has a license under Johnson Patent No. 2,129,374, the subject-matter claimed in that patent is not used in Casco's commercial lighter.

Conclusions of Law.

28. That this Court has jurisdiction of all of the parties and of the matter in controversy.

87 29. That plaintiff is the owner of the entire right, title and interest in and to Letters Patent in suit No. 1,736,544, No. 2,129,374 and No. 2,140,311, with full power to sue for infringement thereof and the right to proceeds of any accounting therefor.

30. That Letters Patent in suit No. 1,736,544 are good and valid in law, particularly as to claims numbered 2, 3 and 11 thereof.

31. That defendant has infringed upon claims numbered 2, 3 and 11 of Letters Patent in suit No. 1,736,544, granted on the invention of Herbert E. Mead, by the manufacture and sale of cigar lighters.

32. That plaintiff is entitled to recover from defendant on an accounting the profits, gains and advantages of defendant and any damages sustained by plaintiff because of the manufacture, use and sale of cigar lighters made according to and embodying the inventions of claims numbered 2, 3 and 11 of Letters Patent in suit No. 1,736,544, granted on the invention of Herbert E. Mead.

33. That claims numbered 1, 3, 4, 5 and 7 of Letters Patent in suit No. 2,129,374, granted on the invention of Arthur A. Johnson, are not for patentable inventions.

34. That claims numbered 3 and 14 to 26, both inclusive, of Letters Patent in suit No. 2,140,311, granted on the invention of Joseph H. Cohen, are not for patentable inventions.

35. That the supplemental complaint shall be dismissed as to Letters Patent in suit No. 2,129,374, granted on

88 the invention of Arthur A. Johnson, and No. 2,140,511, granted on the invention of Joseph H. Cohen.

36. That the cost of this action shall be divided with two-thirds in favor of the defendant and one-third in favor of the plaintiff, and the parties shall have judgment and execution therefor.

Holly,
United States District Judge.

Dated: July 14, 1939.

89 And on, to wit, the 14th day of July, 1939, came the Defendant by its attorneys and filed in the Clerk's office of said Court its certain Suggested Findings of Fact and Conclusions of Law in words and figures following, to wit:

90 IN THE UNITED STATES DISTRICT COURT. Filed July 14, 1939.
* * (Caption—16188) * *

DEFENDANT'S SUGGESTED FINDINGS OF FACT.

3. Samples of the device which Mead attempted to market were offered in evidence and were different in construction from anything shown in the Mead Patent No. 1,736,544. In the commercial devices the thermostat was in the form of a coil and served also as a spring. It was mounted outside of the rotary socket member instead of inside the socket as shown in the patent.

10. Johnson Patent No. 2,129,374 discloses no patentable invention and is anticipated by defendant's reduction to practice October 16, 1933. Some of the claims are invalid because they are directed to an old combination of a plug member and a socket member. The patent is also invalid because it is directed primarily to a mere reversal of a thermostatic member shown in the prior art.

91 11. Cohen Patent No. 2,140,311 is invalid for lack of invention over the prior art. Most of the claims relied upon are invalid because they are directed to the old combination of a plug and socket member. Claim 3 is not infringed. The patent is also invalid because it contains new matter which was not present in the application as originally filed and claims 14-26, inclusive, are not infringed because the subject matter of these claims was only inserted and claimed after defendant was on the market with the lighter charged to infringe.

12. Cohen Patent No. 2,140,311 is invalid because it is apparent from inspection of the patent that the device is inoperative. The thermostat is so far removed from the heating element that it is apparent that heat from the heating element could not reach the thermostat quickly enough to perform the function for which it is intended.

14. Plaintiff called Mead and other witnesses to prove that Mead conceived the invention and made a full-size operative and satisfactory cigar lighter prior to the filing date of the application for his patent August 24, 1927. The

testimony of the witnesses as to the making of such a device was vague as to dates and uncorroborated by physical exhibits in the form of models or drawings. The evidence is insufficient to prove a reduction to practice earlier than the filing date of the application for the Mead patent.

.....

District Judge.

July 14, 1939.
Leave granted to file, but not adopted.

Holly.

92 And afterwards, to wit, on the 14th day of July, 1939, being one of the days of the regular July term of said Court, in the record of proceedings thereof, in said entitled cause, before the Honorable William H. Holly, District Judge, appears the following entry, to wit:

Entered July 14, 1939.

93 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption—16188) * *

DECREE.

This civil action is before the Court for the entry of decree following final hearing, submission of the action on arguments of counsel and briefs for both sides and determination thereof by this Court; and thereupon, it is

Ordered, Adjudged and Decreed as follows:

1. That plaintiff, The Automatic Devices Corporation, a corporation duly organized and existing under the laws of the State of Connecticut and having its principal and a regular and established place of business at Bridgeport, Fairfield County, Connecticut, is vested with legal title to the Letters Patent of the United States named in the complaint and supplemental complaint, to-wit, No. 1,736,544, granted on November 19, 1929, for Cigar Lighter, on the invention of Herbert E. Mead, No. 2,129,374, granted on September 6, 1938, for Electric Cigar Lighter, on the invention of Arthur A. Johnson, and No. 2,140,311 granted on December 13, 1938, for Cigar Lighter, on the invention of Joseph H. Cohen, and that said Letters Patent No. 1,736,544 is good and valid in law as to claims numbered 2, 3 and 11 thereof.

94 2. That defendant, Sinko Tool and Manufacturing Company, a corporation duly organized and existing

under the laws of the State of Illinois and having its principal place of business at Chicago, Cook County, Illinois, has infringed upon said Letters Patent to Mead, No. 1,736,544, as to claims numbered 2, 3 and 11 thereof.

3. That a writ of injunction, directed to defendant, Sinko Tool and Manufacturing Company, be issued out of and under the seal of this Court, permanently restraining and enjoining defendant, its agents, attorneys, servants and employees and all others acting by and under its direction or authority, its successors or assigns, from making or causing to be made, using or causing to be used or selling or causing to be sold devices or parts thereof made according to and embodying the inventions disclosed and claimed in claims numbered 2, 3 and 11 of said Letters Patent of the United States in suit to Mead, No. 1,736,544. The injunction shall not be effective for ten (10) days from the date of this decree.

4. That plaintiff shall recover from the defendant the profits, gains and advantages of the defendant and also the damages suffered by plaintiff because of defendant's infringement upon said Letters Patent No. 1,736,544 as to claims numbered 2, 3 and 11 thereof.

5. That this case be referred to Master Eiseman, Esq., of ....., who is hereby appointed a Special Master of this Court to ascertain, take, state and report to this Court (a) an account of the devices or parts thereof manufactured, used or sold by defendant made according to and embodying the inventions described and secured in claims numbered 2, 3 and 11 of said Letters Patent No. 1,736,544, (b) the gains, profits and advantages which defendant has received or which have arisen or accrued to it from infringing upon the said exclusive rights of plaintiff in and to said claims of Letters Patent No. 1,736,544, (c) the damages which plaintiff has suffered by reason of said infringement and (d) what would constitute a reasonable royalty for the use made by defendant of said claims of said Letters Patent No. 1,736,544.

95

6. That plaintiff on such accounting shall have the right to cause the examination of the defendant, its agents and employees and also to examine other witnesses and to cause the production and examination of the necessary books, vouchers, records and documents of defendant and to have all necessary process of this Court to compel such attendance and production before the Master at such times and places as he shall from time to time direct.

7. That said Letters Patent No. 2,129,374 is invalid as

to claims thereof in suit numbered 1, 3, 4, 5 and 7 and said patent in suit No. 2,140,311 is invalid as to the claims thereof in suit numbered 3 and 14 to 26, both inclusive.

8. That two-thirds (2/3rds) of the costs of this action shall be borne by the plaintiff and one-third (1/3rd) thereof shall be borne by the defendant, and recovery by one or the other of the parties from the other, as the case may be, shall be had by judgment and execution of such amounts of such costs as may be necessary to a division of the costs in accordance with this decree.

Holly,
United States District Judge.

Dated: July 14, 1939.

Entered July 14, 1939.

96 And afterwards, to wit, on the 14th day of July, 1939, being one of the days of the regular July term of said Court, in the record of proceedings thereof, in said entitled cause, before the Honorable William H. Holly, District Judge, appears the following entry, to wit:

97 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption—16188) * *

ORDER.

Defendant's motion for supersedeas of the injunction ordered herein pending the mandate of the Court of Appeals of this Circuit, is hereby granted upon the following conditions:

1. That defendant, within ten days hereof, file notice of appeal and a supersedeas bond in the amount of Five Thousand Dollars ($5,000.00), to be approved by the Clerk of this Court.

2. That defendant file, on or before the 10th day of each month, with the Clerk of the Court, a statement showing the number of infringing cigar lighters sold by defendant during the preceding calendar month, and serve plaintiff's attorney with a copy.

3. Nothing herein shall preclude plaintiff from moving for an additional bond or bonds upon a showing that the bond or bonds previously filed by defendant are not adequate to protect plaintiff.

Holly,
United States District Judge.

Dated: July 14, 1939.

98 And on, to wit, the 20th day of July, 1939, came the Defendant by its attorneys and filed in the Clerk's office of said Court its certain Notice in words and figures following, to wit: Filed July 20, 1939.

99 IN THE UNITED STATES DISTRICT COURT.

* * (Caption—16188) * *

NOTICE.

To: Honorable Hoyt King
Clerk of the U. S. District Court
Chicago, Illinois
Messrs. Wilkinson, Huxley, Byron & Knight
First National Bank Building
Chicago, Illinois
Attorneys for Plaintiff

Please Take Notice that defendant, Sinko Tool & Manufacturing Company, appeals to the United States Circuit Court of Appeals for the Seventh Circuit from that part of the decree which was entered herein on July 14, 1939, and holds that Letters Patent to Mead, No. 1,736,544, as to claims numbered 2, 3, and 11 thereof, is valid and has been infringed by defendant, Sinko Tool & Manufacturing Company, by its manufacture and sale of cigar lighters like Plaintiff's Exhibit 2; that defendant, Sinko Tool & Manufacturing Company, be permanently enjoined from making, using, or selling cigar lighters like Plaintiff's Exhibit 2; and that plaintiff shall recover from defendant the profits, gains and advantages of defendant and also the damages suffered by plaintiff because of defendant's manufacture and sale of said cigar lighters.

Chritton, Wiles, Davies, Hirschl & Dawson,
Attorneys for Defendant.

Chicago, Illinois
July 20, 1939.

100 And on, to wit, the 21st day of July, 1939 came the defendant by its attorneys and filed in the Clerk's office of said Court its certain Supersedeas Bond Pending the Mandate of the Court of Appeals in words and figures following, to wit:

Filed July 21, 1939. 101 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption 16188) * *

SUPERSEDEAS BOND PENDING THE MANDATE OF THE COURT OF APPEALS.

Know All Men by These Presents, That We, Sinko Tool & Manufacturing Company, of Chicago, Illinois, a corporation duly organized and existing under the laws of the State of Illinois, having its principal office at Chicago, Illinois, as Principal, and American Surety Company of New York, of the City of New York, and State of New York, as Surety, are held and firmly bound unto the above-named The Automatic Devices Corporation, its successors and assigns, in the sum of Five Thousand Dollars ($5,000.00) to be paid to The Automatic Devices Corporation, and for the payment of which well and truly to be made, we bind ourselves and each of us, our and each of our successors and assigns, jointly and severally by these presents.

Sealed with our seals and dated this 20th day of July, 1939.

Whereas, lately at a regular term of the District Court of the United States for the Northern District of Illinois, Eastern Division, in a suit pending in said Court be-
102 tween The Automatic Devices Corporation, plaintiff, and Sinko Tool & Manufacturing Company, defendant, Equity No. 16188, a decree was entered against said Sinko Tool & Manufacturing Company on July 14, 1939, providing for a writ of injunction directed to Sinko Tool & Manufacturing Company restraining it from making, using, or selling certain cigar lighters and ordering an accounting because of infringement on Letters Patent No. 1,736,544· a notice of appeal by said defendant, Sinko Tool & Manufacturing Company, having been filed, appealing to the United States Circuit Court of Appeals for the Seventh Circuit to reverse a part of said decree; and the United States District Court, on July 14, 1939, having entered an order staying the injunction and accounting conditioned on said Sinko Tool & Manufacturing Company filing a bond in the amount of Five Thousand Dollars ($5,000.00) and filing monthly statements of the number of cigar lighters, charged to infringe, sold by defendant during the preceding calendar month, said bond to be approved by the Clerk of the United States District Court.

Now, Therefore, the condition of the above obligation

is such that if said Sinko Tool & Manufacturing Company shall diligently prosecute said appeal to effect and pay
103 all damages, profits, and costs which may accrue between the date hereof and the mandate of the Circuit Court of Appeals, if it fails to make good its plea, then the above obligation to be void, else to remain in full force and effect.

Sinko Tool & Manufacturing Company,
By Daniel Szantay,
Pres.

Attest: Elmer Szantay,
(Seal) *Sec.*

American Surety Company of N. Y.,
B. H. Davenport,
Res. V. P.
Attest: G. Hoffman,
Res. Ass't Sec. (Seal)

Approved this 20th day of July, 1939.

Hoyt King,
Clerk of the U. S. District Court.

104 And on, to wit, the 24th day of July, 1939 came the plaintiff by its attorneys and filed in the Clerk's office of said Court its certain Notice of Appeal in words and figures following, to wit: Filed July 24, 1939.

105 In the District Court of the United States.

For the Northern District of Illinois,

Eastern Division.

The Automatic Devices Corporation, *Plaintiff*,
vs.
Sinko Tool & Manufacturing Company, *Defendant.*
} In Equity No. 16,188.

NOTICE OF APPEAL TO CIRCUIT COURT OF APPEALS UNDER RULE 73 (b).

Notice is hereby given that The Automatic Devices Corporation, the plaintiff above named, hereby appeals to the Circuit Court of Appeals for the Seventh Circuit from that

part of the judgment entered in this action on July 14, 1939, holding invalid United States Letters Patent No. 2,129,374 to Johnson and United States Letters Patent No. 2,140,311 to Coben.

(Wilkinson, Huxley, Byron & Knight),
Attorneys for Plaintiff,
First National Bank Building,
Chicago, Illinois.

(James P. Hume),
Of Counsel.
July 24th, 1939.

Filed July 31, 1939.

106 And on, to wit, the 31st day of July, 1939, came the Plaintiff by its attorneys and filed in the Clerk's office of said Court its certain Appeal Bond in words and figures following, to wit:

107 IN THE DISTRICT COURT OF THE UNITED STATES.
* * (Caption—16188) * *

APPEAL BOND.

Know All Men By These Presents: That we, The Automatic Devices Corporation, a Connecticut corporation, as principal, and Continental Casualty Company, a corporation organized and existing under the laws of the State of Indiana, duly authorized to transact business within the State of Illinois, in said District, as surety, are held and stand firmly bound unto Sinko Tool & Manufacturing Company, an Illinois corporation, in the sum of Two Hundred Fifty Dollars ($250.00), to be paid to said Sinko Tool & Manufacturing Company, its successors and assigns, to which payment, well and truly to be made, we bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

Sealed with our seals, and dated this 27th day of July, 1939.

Whereas, lately, at a regular term of the District Court of the United States for the Northern District of Illinois, Eastern Division, in a suit pending in said court between The Automatic Devices Corporation, plaintiff, and Sinko Tool & Manufacturing Company, defendant, in Equity No. 16,188, a judgment was entered, in part holding in-
108 valid United States Letters Patent No. 2,129,374 to Johnson and United States Letters Patent No. 2,140,-

311 to Cohen, and said The Automatic Devices Corporation having filed its notice of appeal to the United States Circuit Court of Appeals for the Seventh Circuit to reverse a part of said judgment;

Now, Therefore, the condition of this obligation is such that if said The Automatic Devices Corporation shall prosecute its appeal to effect, and answer all damages and costs if it fails to make its appeal good, then the above obligation to be void; otherwise to remain in full force and effect.

The Automatic Devices Corporation,
By Arthur A. Johnson,
President.

Attest:
Anne Pistey,
Secretary.

The Continental Casualty Company,
By .....

Dated: July ....., 1939.

109 And on, to wit, the 20th day of September, 1939, came the Plaintiff by its attorneys and filed in the Clerk's office of said Court its certain Stipulation Extending Time for Filing Record in words and figures following to wit: Filed Sept. 20, 1939.

110 In the District Court of the United States.

* * (Caption—16188) * *

STIPULATION.

It Is Hereby Stipulated by counsel for the parties hereto respectively, this Honorable Court consenting, that the time for filing the record in the Court of Appeals for both parties shall be extended to and including September 27, 1939.

Wilkinson, Huxley, Byron & Knight,
Counsel for Plaintiff.

Chicago, Illinois,
Sept. 20, 1939.

Chritton, Wiles, Davies, Hirschl & Dawson,
Counsel for Defendant.

Chicago, Illinois,
Sept. 20, 1939.

So Ordered:
Barnes,
U. S. District Judge.

Sept. 20, 1939.

111 And afterwards, to wit, on the 20th day of September, 1939, being one of the days of the regular September term of said Court, in the record of proceedings thereof, in said entitled cause, before the Honorable John P. Barnes, District Judge, appears the following entry, to wit:

112 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption—16188) * *

Wednesday, September 20th, A. D. 1939.

Present: Hon. John P. Barnes, District Judge.

On stipulation of the parties to this suit filed herein it is Ordered that the time for filing record in the United States Circuit Court of Appeals, 7th Judicial Circuit for both parties be and the same is hereby extended to and including September 27th 1939.

113 And on, to wit, the 26th day of September, 1939 came the Parties by their attorneys and filed in the Clerk's office of said Court their certain Stipulation in words and figures following, to wit:

114 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption—16188) * *

STIPULATION.

It Is Hereby Stipulated and Agreed, by and between the parties hereto by their respective attorneys, this Honorable Court consenting, that the time for filing the record in the above-entitled cause in the Court of Appeals for both parties be extended to and including October 12, 1939.

Wilkinson, Huxley, Byron & Knight,
Attorneys for Plaintiff.
Chritton Wiles, Davies, Hirschl & Dawson,
Attorneys for Defendant.

Chicago, Illinois,
September 26, 1939.

So Ordered:

.....
U. S. District Judge.

Chicago, Illinois,
September 26, 1939.

115 And afterwards, to wit, on the 26th day of September, 1939, being one of the days of the regular September term of said Court, in the record of proceedings thereof, in said entitled cause, before the Honorable William H. Holly, District Judge, appears the following entry, to wit:

116 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption—16188) * *

Tuesday, September 26th, A. D. 1939.

Present: Hon. William H. Holly, District Judge.

On stipulation of the parties to this suit herein it is

Ordered that the time to file record in the United States Circuit Court of Appeals be and the same is hereby extended to October 12th, A. D. 1939.

117 And on, to wit, the 28th day of September, 1939, came the Parties by their attorneys and filed in the Clerk's office of said Court their certain Stipulated Designation as to Record in words and figures following, to wit: Filed Sept. 28, 1939.

118 IN THE DISTRICT COURT OF THE UNITED STATES.

* * (Caption—16188) * *

STIPULATED DESIGNATION AS TO RECORD.

To Hon. Hoyt King, Clerk of the U. S. District Court:

The parties having agreed by stipulation as to the designation of parts of the record, proceedings and evidence to be included in the record on appeal, you are hereby requested to prepare a transcript of record to be transmitted to the Circuit Court of Appeals for the Seventh Circuit pursuant to the appeal and cross appeal heretofore taken in this case and include therein the following papers and orders, namely, viz.:

Bill of Complaint.

Answer of Defendant.

Motion for an Order Granting Leave to File Supplemental Complaint.

Supplemental Complaint.

Motion for a Bill of Particulars.

Plaintiff's Bill of Particulars.

Answer to Supplemental Bill of Complaint.

Stipulation of March 16, 1939.

Stipulation of April 14, 1939.

Memorandum Opinion by Judge Holly, June 28, 1939.

Defendant's Petition for Rehearing with remarks forming part thereof, July 5, 1939.

Order dated July 6, 1939.

Defendant's Memorandum in Support of Petition for Rehearing, July 6, 1939.

119 Plaintiff's Memorandum in Opposition to Defendant's Petition for Rehearing, July 6, 1939.

Memorandum of Court dated July 11, 1939.

Findings of Fact and Conclusions of Law dated July 14, 1939.

Defendant's Suggested Findings of Fact, not adopted by the Court but filed July 14, 1939.

Decree dated July 14, 1939.

Order of July 14, 1939, re: Supersedeas.

Notice of Appeal by Defendant, July 20, 1939.

Supersedeas Bond, pending the mandate of the Court of Appeals, July 20, 1939.

Notice of Appeal by Plaintiff, July 24, 1939.

Plaintiff's Appeal Bond.

Stipulation and Order extending time for filing record and docketing appeal in the Court of Appeals to September 20, 1939.

Stipulation and Order extending time for filing record and docketing appeal in the Court of Appeals to September 27, 1939.

Stipulation and Order extending time for filing record and docketing appeal in the Court of Appeals to October 12, 1939.

This designation, dated September 28, 1939.

Transcript of the proceedings and testimony commencing with line 5 on page 44 of the typewritten transcript to and including line 2, page 256; beginning page 257 to and including line 18 on page 371; commencing line 17, page 372 through line 10, page 373; page 376 to page 388, both inclusive.

Order of District Court dated September 28, 1939 certifying certain physical exhibits as part of the record on appeal.

The following Exhibits:

Plaintiff's Exhibits:

1. Drawing of defendant's accused cigar lighter.
4. Notice of infringement dated June 28, 1938.
5. Notice of infringement by letters dated December 14, 1938 and December 15, 1938.
6. Book containing three patents in suit, Mead patent No. 1,736,544, Johnson patent No. 2,129,374 and Cohen patent No. 2,140,311.
30. Bill of sale dated December 27, 1926, from trustee and mortgagee of Central Stamping Company to S. T. Jessop.
31. Five sheets made by Mead.
32. Paper of instructions for Jesco Automatch lighter.
34. List, consisting of two sheets, of tools, etc. dated August 6, 1926.
36. Front page and page 653 of Montgomery Ward catalogue of Fall and Winter, 1928 and 1929.

120 39. Copy of Cohen patent No. 2,117,703.

Defendant's Exhibits:

A. Volume of patents consisting of patents set up in defendant's answer, also Burnett patent 972,811 and Waller patent 1,779,455.
C. Ledger sheet used to identify when Defendant's Exhibit B was manufactured.
E. Ledger sheet used to identify when Defendant's Exhibit D was manufactured.
G. Page from "The Motor", October 18, 1927.
H. Small drawing made by J. Sinko September 26, 1933, of cigar lighter with thermostatic control.
I. Large drawing made by J. Sinko, September 26, 1933, of cigar lighter with thermostatic control.

You will also please certify and transmit as physical exhibits, the following:

Plaintiff's Exhibits:

2. Defendant's accused cigar lighter.
3. Commercial cigar lighter of plaintiff's licensee, Casco Products Corporation.
3-A. Animated model of Casco automatic cigar lighter.
7. Mead cigar lighter.
8. Colored chart of sheet 1 of Mead patent No. 1,736,544.
9. Colored chart of sheet 2 of Mead patent No. 1,736,544.
10. Animated model of Mead patent No. 1,736,544.
11. Animated model of Mead patent No. 1,736,544.

12. Colored chart of sheet 1 of Cohen patent No. 2,129,374.
13. Colored chart of sheet 2 of Cohen patent No. 2,129,374.
14. Animated model of Cohen patent No. 2,129,374.
15. Colored chart of Johnson patent No. 2,140,311.
16. Animated model of Johnson patent No. 2,140,311.
17. Colored chart of defendant's accused cigar lighter, identified at page 64.
18. Animated model of defendant's accused cigar lighter.
19. Chart showing sales of Casco wireless cigar lighter.
20. Stand having on it one of plaintiff's commercial lighters on the right side, a manual lighter in the center and one of defendant's accused lighters on the left hand side.

121 21. Sinko application papers filed in 1938.
33. Cigar Lighter model, identified by Mead.
35. Carton for Jesco Automatch.
37. Cigar Lighter identified by witness Johnson.
38. Sinko instantaneous lighter, offered to the trade in 1937.

Defendant's Exhibits:

B. Little cut-out device for flashing an electric light, manufactured by Sinko Tool and Manufacturing Company.

D. Safety plug used for automatic cut-out, manufactured originally by Electric Safety Devices Company.

F. Testing device used by defendant to determine the life of heating elements.

J. Cuno lighter revised by defendant in October, 1933 in accordance with Defendant's Exhibits H and I.

K. Certified copy of file wrapper and contents of Johnson patent 2,129,374.

L. Certified copy of Cohen patent 2,140,311 file wrapper and contents.

M. Automatic circuit breaker manufactured by customers of W. M. Chase Company to whom they supply bimetal.

O. Small automatic desk lighter used by Mr. Wiles for illustrative purposes.

In addition to the foregoing, the parties hereto have stipulated and agreed that, subject to inspection by counsel for the other party, each party may retain the custody of its own physical exhibits as set forth in the foregoing

designation, to be held by them, respectively, until five (5) days prior to the hearing in the Court of Appeals, at which time such exhibits are to be delivered to the Clerk of the Court of Appeals.

Wilkinson, Huxley, Byron & Knight,
Counsel for Plaintiff.

Chritton, Wiles, Davies, Hirschl & Dawson,
Counsel for Defendant.

Approved:
Holly,
United States District Judge.

Filed: September 28, 1939.

.....
Clerk.

638 Northern District of Illinois, } ss.
Eastern Division. }

I, Hoyt King, Clerk of the District Court of the United States for the Northern District of Illinois, do hereby certify the above and foregoing to be a true and complete transcript of the proceedings had of record made in accordance with Stipulated Designation filed in this Court in the cause entitled The Automatic Devices Corporation *vs.* Sinko Tool and Manufacturing Company, No. 16188, as the same appear from the original records and files thereof now remaining in my custody and control.

In Testimony Whereof, I have hereunto set my hand and affixed the seal of said Court at my office, in the City of Chicago, in said District, this 11th day of October, A. D. 1939.

Hoyt King,
Clerk.

(Seal)

Filed Oct. 17, 1939.

IN THE UNITED STATES CIRCUIT COURT OF APPEALS

For the Seventh Circuit.

Sinko Tool and Manufacturing Company, *Defendant-Appellant,* *vs.* The Automatic Devices Corporation, *Plaintiff-Appellee.*	Appeal No. 7103.
The Automatic Devices Corporation, *Plaintiff-Appellant,* *vs.* Sinko Tool and Manufacturing Company, *Defendant-Appellee.*	Appeal No. 7104.

STIPULATION.

Subject to the approval of a Judge of the Court of Appeals, it is Stipulated by and between counsel for the respective parties as follows:

1. The following shall constitute the printed Transcript of Record:

(a) All papers mentioned in the first section of "Stipulated Designation as to Record" appearing before the list of Plaintiff's Exhibits.

(b) This stipulation.

(c) The following Plaintiff's Exhibits:

1. (Missing.)
4.
5.
6. (consisting of the three patents in suit, to-wit: Mead No. 1,736,544, Johnson No. 2,129,374, and Cohen No. 2,140,311. Thirty-five copies of each patent will be supplied by counsel.)
30.
31.
32.
34.
36.

39. (consisting of Cohen No. 2,117,703. Thirty-five copies of which will be supplied by counsel.)

(d) Copeland patent No. 1,919,159. (By stipulation. This patent is to be reproduced by the printer.)

(e) The following Defendant's Exhibits:

A. (consisting of the following United States patents, thirty-five copies of each of which will be supplied by counsel:

No. 493,380—Hammarstrom
926,584—Morris et al.
972,811—Burnett
1,046,777—Hadaway
1,141,576—Ovington
1,261,256—Maple
1,294,045—Cavanagh
1,397,777—Pelton et al.
1,400,646—Webster
1,416,263—Campbell
1,431,220—Donle
1,437,701—Zecchini
1,530,730—Leeb
1,556,246—Norden
1,563,854—Haugh
1,565,499—Reid
1,614,169—Aichele
1,630,358—Sandin
1,689,007—Arnesen
1,780,462—Carmean et al.
1,838,363—Copeland
1,844,206—Copeland
2,002,492—Dess
2,117,232—Cohen

Also the following British patents which are to be reproduced by the printer:

No. 285,200—Smith
298,073—Rupps.)

C.

E.

G.

H.

I.

2. That all other exhibits not mentioned above shall

be treated as physical exhibits, not to be reproduced in the printed transcript.

Henry M. Huxley,
Of Counsel for Automatic Devices Corporation.
Bernard A. Schroeder,
Of Counsel for Sinko Tool and Manufacturing Company.

Chicago, Illinois,
October 18, 1939.

Endorsed: In the United States Circuit Court of Appeals. * * (Caption—7103-7104) * * * Stipulation. U. S. C. C. A.—7. Filed Oct 17 1939. Frederick G. Campbell, Clerk.

PAGES 279 + 280
ARE TORN OUT —
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Nov. 19, 1929. H. E. MEAD 1,736,544

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CIGAR LIGHTER

Filed Aug. 24, 1927 2 Sheets-Sheet 2

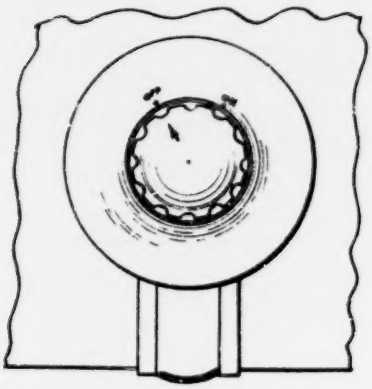

Fig 17

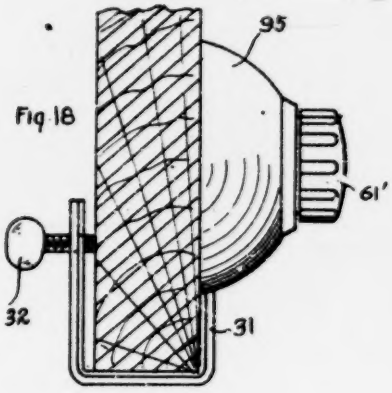

Fig 18

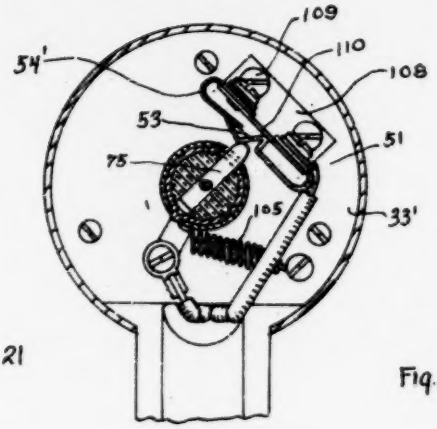

Fig 21

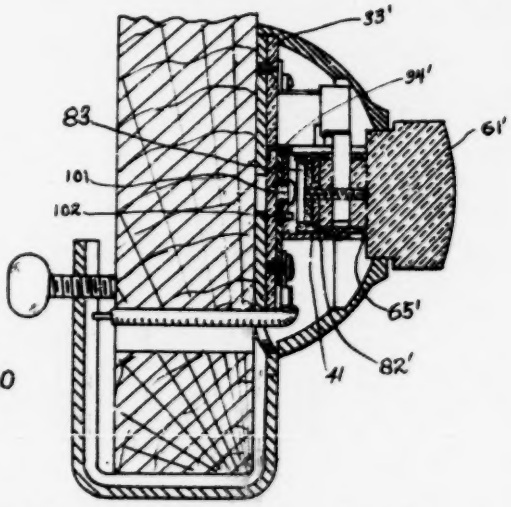

Fig 20

Fig 19

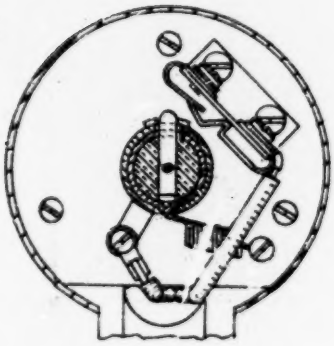

Fig 22

Fig 23

INVENTOR

Herbert E Mead

by Cromwell, Greist & Warden

ATTORNEY

Patented Nov. 19, 1929

1,736,544
283

UNITED STATES PATENT OFFICE

HERBERT E. MEAD, OF DETROIT, MICHIGAN, ASSIGNOR TO S. T. JESSOP CO., INC., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

CIGAR LIGHTER

Application filed August 24, 1927. Serial No. 215,236.

This invention relates to cigar lighters or devices of a similar nature wherein a member is arranged to be electrically heated to incandescence to be used for lighting cigars and the like.

Among the objects of the invention is a device of the above described character which is extremely simple and cheap in manufacture and more efficient than the devices used heretofore. The lighter, according to the invention, comprises a base unit and a plug removably mounted in the base unit. The plug carries a resistance coil that may be heated to incandescence to serve as a lighting medium. The base has a socket for receiving the plug, the socket with the plug being movable on the base between a position where the coil is energized and a position where the coil is de-energized. Normally the socket and the plug are held in a position where no current will flow through the heating coil. If the coil is to be heated for lighting purposes, the plug and the socket are moved to the energizing position where they are held locked until the heating coil has reached the desired temperature. A thermostatic element responsive to the temperature condition of the heating coil releases the engagement of the socket and plug in locked position whereupon the same are returned to the original position so that the plug may be removed and serve its purpose.

The lighter according to the invention embodies, in addition to the principles of construction and operation described above, a number of other new features constituting distinct objects of the invention and contributing to the simplicity of construction and the cheapness of manufacture, as well as the effectiveness of the operation of the same. These objects will be best understood from the following description of exemplifications of the invention, reference being had to the accompanying drawings, wherein

Fig. 1 is a side elevational view of the base assembly of a lighter embodying the invention;

Fig. 2 is a similar view of the base plate of the assembly in Fig. 1;

Fig. 3 is a similar view of the socket;

Fig. 4 is a top elevational view of the locking unit with thermostatic release element;

Fig. 5 is an elevational view of the pivot screw used to hold the socket and base to the supporting plate;

Fig. 6 is a top elevational view of the biasing spring which tends to hold the socket in off position;

Fig. 7 is a top view of the socket in mounted position with the spring removed;

Fig. 8 is a side elevation view of the assembled lighting plug;

Fig. 9 is a similar view of the plug knob;

Fig. 10 is a similar view of the plug shell that is held on the knob;

Fig. 11 is a similar view of the porcelain core of the plug;

Fig. 12 is an elevation of the latch pin of the plug;

Fig. 13 is a side elevation of the heating unit of the plug;

Fig. 14 is a transverse sectional view through the lighter with the plug held in the socket in the on position;

Fig. 15 is a central sectional view through the lighter showing the plug mounted within the socket;

Fig. 16 is a view similar to Fig. 14 but with the socket and plug in the off position;

Fig. 17 is a top elevational view of the completely assembled lighter mounted on a dash board;

Fig. 18 is a side elevation of the completely mounted lighter;

Figs. 19, 20 and 21 are views similar to Figs. 14, 15 and 16, respectively, of a lighter of somewhat modified construction;

Figs. 22 and 23 are top elevational views of the base socket in the modification of Figs. 19 to 21 with the socket in the on and off positions.

Referring to the drawings, a cigar lighter is shown of a type suitable for use on dash boards of automobiles, the lighter comprising a metallic supporting plate 31 having a U-shaped extension adapted to overlap the dash board and arranged to be clamped thereto as by means of a clamping screw 32, as seen in Fig. 18. The supporting plate 31 carries a base unit or base assembly of the

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lighter, as shown in Fig. 1, the base assembly being illustrated in Figs. 2 to 7.

The base assembly comprises a fiber or other insulating plate 33 adapted to be secured to the supporting plate 31. Mounted in the center of the fiber plate 33 is a socket carrier 34, Fig. 2, which consists of a brass stamping having two outwardly turned lugs 35 for anchoring in the fiber plate 33, and an upstanding lug 36 adapted to engage a slot in the socket referred to hereinafter. The socket carrier has a central hole and on one side thereof there is an upstanding bracket 37.

Mounted on the socket carrier is a socket 41, Fig. 3, in the form of a cup-shaped metallic cylinder having a closed bottom with a central opening through which it is rotatably secured above the carrier as by means of a pivot screw 42, Fig. 5. One side of the socket cylinder has a perforation 43 and the opposite side thereof has a slot 44 referred to hereinafter. The bottom of the socket has also a circular slot 45, Fig. 7, into which the upstanding lug 36 of the socket carrier projects to limit the rotary movement of the socket around the pivot screw 42. A spiral biasing spring 47 having its inner end anchored in the head of the screw 42 and its outer end secured to the wall of the socket 41 tends to hold the socket in one end position as determined by the lug 36 which thus acts as a stop, this position corresponding to the off postion of the lighter. The lower part of the socket surrounding the spiral biasing spring 47 is somewhat bulged in order to accommodate the spring.

The bracket 37 of the socket carrier has insulatingly mounted thereon a latch and release element 51 comprising a latch or catch spring 52, of phosphorous bronze for instance, having a folded end portion 53 adapted to act as a catch when held in the bent-away position by means of a thermostatic element such as a bimetallic strip 54. The catch spring 52 and the bimetallic strip of the spring 54 are suitably mounted on a supporting plate 55 which is insulatingly secured to the bracket 37.

The several parts described above are readily assembled into the complete base unit by simply screwing the latch unit to the upright part of the socket carrier; placing the pivot screw 42 in the base opening of the socket 41 and screwing it over the socket carrier on the fiber plate 33; and placing the spiral spring within the lower bulged portion of the socket. The base has also two supply connections in the form of two conductors 57 and 58 leading from a source of electric energy to a terminal extension 59 of the socket carrier and to the latch plate 55, respectively.

Within the socket 41 there is removably mounted a plug unit 61 shown completely assembled in Fig. 8 and having its several parts illustrated in Figs. 9 to 12. The plug comprises a knob 62 of suitable insulating material, such as bakelite, having a molded-in central square brass pin 63 provided with a longitudnal tapped perforation 64. The knob has mounted thereon a cylindrical metal shell 65, stamped and drawn from brass for instance. The shell is open at one end and closed at the other, having at the closed end a square hole fitting over the square pin on the knob. On one side of the side wall of the shell there is a perforation 66 corresponding to the perforation 43 in the socket, and on the opposite side of the shell there is an embossed protuberance 67 adapted to fit in the slot 44 of the socket and engage the same so that upon turning the shell by means of the knob the socket will be rotated on the pivot screw 42.

Within the brass shell 65 there is mounted a core 71 of porcelain or similar material. The core fits the shell and has a longitudinal perforation 72 of which the lower portion fits over the square end of the knob pin 63. Extending transversely through the core at right angles to the longitudinal perforation there is a second perforation 73 in which is mounted a latch pin 75, one end of the latch pin being rounded at 76 for smooth engagement with the spring latch 53. Fitting in the open end of the shell in front of the porcelain core 71 is a heating unit 81 comprising a flat cup-shaped metallic container 82 having mounted therein an insulated spiral wound heating coil 83, the outer end of which is connected to the walls of the cup and the inner end of which is secured to a central screw 84. The coil and the screw are insulated from the cup as by means of mica washers 85 so that by establishing circuit connections to the walls of the cup 82 and to the screw 84, current may be sent through the coil 83. The coil 83 with the screw 84 are inserted through the perforation in the bottom of the cup 82 and held in place with the mica washers by a nut 86 screwed against the bottom of the cup. The heating unit may thus be readily replaced with little cost.

The heating unit screw 84 is arranged to be threaded into a tapped perforation 88 in the latch pin 75. To assemble the plug the porcelain core 71 is inserted in the brass shell 65 and the two are secured over the square pin in the knob by means of a screw 91. The latch pin 75 is thereupon inserted through the perforation 66 of the shell into the perforation 73 of the core and the heating unit screw 84 screwed in place, thereby firmly locking the latch pin in its position, the perforation 66 of the shell being sufficiently wide to prevent contact of the pin with the shell. Accordingly, with this arrangement the latch pin will act as a terminal connection to the inner end of the heating coil 83 while the

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shell will act as a terminal connection to the outer end of the coil. The walls of the cup 82 of the heating unit are preferably somewhat tapered so as to wedge tightly on the inside of the shell 65 when screwed down in place.

When the plug is inserted into the socket, the pin 76 and the protuberance 67 slide into the slots 43 and 44 of the socket, the protuberance 67 serving to drive and rotate the socket when the knob is turned. The width of the slot 44 of the shell is such that the latch pin makes no contacting connection with the walls of the socket.

As explained above, the spiral biasing spring 47 normally holds the socket in the off position as shown in Fig. 14. Accordingly, with the plug inserted into the socket the terminal end 76 of the latch pin will project freely in space and no current will be passing through the heating coil. In order to operate the lighter, the plug is turned to the on position. This brings the projecting end of the latch pin 76 into engagement with the detent of the catch spring 53 which is held pressed outwardly by the metallic strip 54. The socket with the plug are held in this position by the detent against the tension of the spiral biasing spring 47 and in this position a circuit is established from the supply wire 57 through the terminal 59, socket 41, shell 65, heating cup 82, through the heating coil to the screw 84, thence through the spring 53, bimetallic strip 54, to the other supply wire 50. The thermostatic element in the form of the bimetallic strip 54 is so arranged as to hold the latch pin 75 in engagement with the pin 75 until the coil has become heated to incandescence and is ready to be used for lighting cigars or the like.

As the heating coil warms up and becomes incandescent the simultaneously heated bimetallic strip 54 becomes deflected so that the end acting upon the detent 53 turns inwardly towards the supporting plate 55 thereby releasing the latch pin, the relative arrangement being such that the latch pin is not given free until after the heating coil has reached the desired temperature. As soon as the latch pin is released the biasing spring 47 throws the socket with the plug to the off position. The plug may then be removed and the heating coil being at incandescence the cigar or cigarette may be lighted. The on position of the plug and the socket is shown in Fig. 16.

In Figs. 17 and 18 the assembled lighting unit is shown comprising also a dome-shaped shell 95 enclosing the operating elements of the lighter to prevent dust, and the like, from reaching the same.

In the modification of the invention shown in Figs. 19 to 23 the arrangement of the base and of the plug is similar to that of the modification described in the previous figures, the distinctions residing in minor constructional features of the various elements. Thus, the socket 41 is secured to the socket carrier 34′ by a rivet 101 which is so arranged as to permit rotary movement of the socket on the rivet shank, a pin 102 serving as a stop to limit said movement. Instead of a spiral biasing spring as used in the first described modification, the socket is normally held in the off position by means of a coil spring 105, one end of which is attached to the socket wall as shown in Figs. 22 and 23, and the other end of which is attached to the fiber base plate 33′.

The latch unit 51 is carried on a separate bracket 108 also secured to the fiber plate, as by means of screws 109. The bracket has a perforation 110 to permit the folded detent portion 53 to recede back and unlock the latch when released by the bimetallic thermostat 54′.

The plug 61′ is also somewhat different from that used in the first described modification in that the shell 65′ does not encircle the cup 82′ of the heating unit. Fig. 19 shows the position of the socket and plug in the off position while Fig. 21 shows the on position of the lighter, Figs. 22 and 23 illustrating the range of the movement of the socket 41′ as limited by the stop formed by the pin 102.

The control action of the thermostatic element 54 depends on the rate at which it is heated while current is being sent through the lighting coil 83. Accordingly, the action of the device will depend on the manner in which the heat control of the thermostatic element will be effected. In some cases the thermostatic element 54 will be heated only by conduction of heat from the heating coil 53 and also by radiation and convection. In other cases it may be preferable to include the thermostatic element 54 in the circuit from the latch pin 75 so that either the entire or part of the heating current must traverse the bimetallic element 54 and heat the same coincidentally with the heating of the lighting coil.

In another modification of the invention, the biasing spring 47 shown in Fig. 6, in connection with the first modification described hereinabove, is made of a thermostatic material, for instance a bimetallic strip which on being heated increases the force with which it acts upon the socket 41 tending to return it to its off-position. Accordingly, when the lighter such as shown in Figs. 14 to 16 but with a biasing spring of thermostatic material, is turned to the on-position, Fig. 14, and the heater spiral 83 is energized and heated, the force exerted by the biasing spring 47 will increase with the rise of the temperature of the heater spiral until the force exerted by it will be sufficient to pull the latch pin 75 off from the engagement with the latch spring 53. In such arrangement, it is not necessary to use the thermostatic element 54

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for upholding the latch spring 53 but an ordinary spring material may be used in making the element 54. However, the thermostatic action of both elements may be utilized with advantage, that is, bimetal may be used both for the element 54 that holds the latch spring 53, as well as for the biasing spring 47, in which case the release of the latch pin 75 from the off-position is determined by the thermostatic action of both thermostatic elements.

Cigar lighters utilizing either one of the foregoing constructions operate very satisfactorily.

When making the biasing spring 47 of thermostatic material, it is often found desirable to use an additional spring 47ª arranged in the interior thereof so as to press the thermostatic spring 47 outwardly. This permits convenient control of the action of the thermostatic spring 47 and has proven very satisfactory in adjusting and controlling the length of time required to increase the tension of the thermostatic element 47 to a point where the latch pin 75 will be pulled off from engagement with the latch spring 53.

The invention is susceptible of many other modifications and the various features thereof may be utilized in a variety of other arrangements. It is accordingly desired that the appended claims be given a broad construction commensurate with the scope of the invention.

I claim:

1. In a device of the class described, a base member, a removable plug supported on said base member, an electrical heating coil on said plug, means on said base member for moving said plug to an energizing position in which said coil is energized, means tending to withdraw said plug from said energizing position, and a thermostatic element responsive to the heating of said coil for controlling the action of said withdrawing means.

2. In a device of the class described, a removable heating member having an electrical heating unit, a socket for receiving and holding said heating member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and means responsive to the temperature of said heating unit for interrupting said energizing circuit.

3. In a lighting device for cigars and the like, a removable heating member having an electric heater, a support for receiving and holding said heating member, current supply terminals on said support, said heating member being movable on said support to a position where said heating unit is energized from said terminals and means responsive to the temperature of said heating unit for controlling the heating thereof.

4. In an electrical lighter of the class described, a plug having an electrical heater, a socket for receiving said member and holding the same, a base for said socket, current supply terminals on said base, said socket being mounted on said base for movement to a position for establishing an energizing connection from said terminals to said heater, and means responsive to the heating of said heater for interrupting the current supply connections thereto.

5. In an electric lighting device of the class described, a removable heating member having an electrical heater, a base, a movable socket on said base for receiving said heating member, current supply terminals on said base, and a bi-metallic thermostat for controlling movement of said socket to vary the energization of said heater on said base.

6. In an electric lighter of the class described, a lighting member having an electrical heater, a socket for receiving and holding said heater, current supply terminals on said base, means for moving said socket and the heater supported thereby to position where it is energized from said current supply terminals, means tending to withdraw said socket from the energizing position, a latching means for locking said socket in the energized position, and a bi-metallic strip controlling said latching means to cause withdrawal of said heating member from the energizing position.

7. In a lighter of the class described, a base, a socket member movably mounted on said base, a heating plug adapted to be inserted and held in said socket, an electric heating coil on said plug, said socket being movable on said base member between an energizing and a de-energizing position.

8. In an electric lighter of the class described, a base member, a socket rotatably mounted on said base member, a heating plug adapted to be inserted into said socket, an electrical heater on said plug, electrical supply terminals on said base member, said socket being rotatable between an energized position where circuit is established from said terminals to said heater and an off position where said circuit is interrupted, means tending to hold said socket in the off position, locking means for locking said socket and the associated plug in the energizing position and thermostatic means for releasing said locking means.

9. In an electric lighter of the class described, a base member, a socket rotatably mounted on said base member, a heating plug adapted to be inserted into said socket, an electrical heater on said plug, electrical supply terminals on said base member, said socket being rotatable between an energized position where circuit is established from said terminals to said heater and an off position where said circuit is interrupted, means tending to hold said socket in the off posi-

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tion, locking means for locking said socket and the associated plug in the energizing position and a bi-metallic element responsive to the heating of said heater for releasing said locking means.

10. In a lighter of the class described, a base member, a tubular socket rotatably mounted on said base member, a heating plug adapted to be inserted into said socket and rotated therewith, a heater on said plug, said plug having a shell fitting and engaging such socket; a latching pin on said plug insulated for said shell, said heating element being connected between said pin and said shell, latching means mounted on said base for engagement with said pin, an electric terminal connection to said socket, an electric terminal connection to said latching means, means tending to move said socket to an unlatched position and a thermostatic element for releasing said latching means in response to the heating of said heater to cause de-energization of said heating coil after being brought to temperature in the energizing position.

11. In an electric lighter of the class described, a base member, a heater member movably mounted on said base member, an electric heater on said heater member, electrical supply terminals on said base member, said heater member being movable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, and automatic means for withdrawing said heater member from the on position to the off position upon heating of said heater.

12. In an electric heater of the class described, a movable heating member having an electrical heating unit, a socket for holding said heater member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and automatic means for withdrawing said heating unit from said energizing position upon predetermined heating of said heating unit.

13. In an electric lighter of the class described, a base member, a socket rotatably mounted on said base member, a heating plug adapted to be inserted in said socket, an electrical heater on said plug, said socket being rotatable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, locking means for locking said socket in the energized position, thermostatic means for releasing said locking means, and a spring screened against the action of said heater arranged to withdraw said socket to the off position.

14. In an electric heater of the class described, a base, a socket movably mounted on said base, a heating plug adapted to be inserted into said socket, a heating unit on the inner end of said plug adapted to be housed in said socket, electrical supply terminals, said socket being movable between an energized position where a circuit is established from said terminals and an off position where said circuit is interrupted, and a spring disposed outside of said socket tending to move the same to a de-energized position.

15. In an electric heater of the class described, a base, a socket movably mounted on said base, a heating plug adapted to be inserted into said socket, a heating unit on the inner end of said plug adapted to be housed in said socket, electrical supply terminals, said socket being movable between an energized position where a circuit is established from said terminals and an off position where said circuit is interrupted, a spring disposed outside of said socket tending to move the same to a de-energized position, and automatic means holding said plug in an energized position until predetermined heating thereof.

In testimony whereof I have hereunto subscribed my name.

HERBERT E. MEAD.

PAGES - 288 + 289

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Sept. 6, 1938. A. A. JOHNSON 2,129,374

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ELECTRIC CIGAR LIGHTER

Filed Aug. 17, 1934

Fig. 1

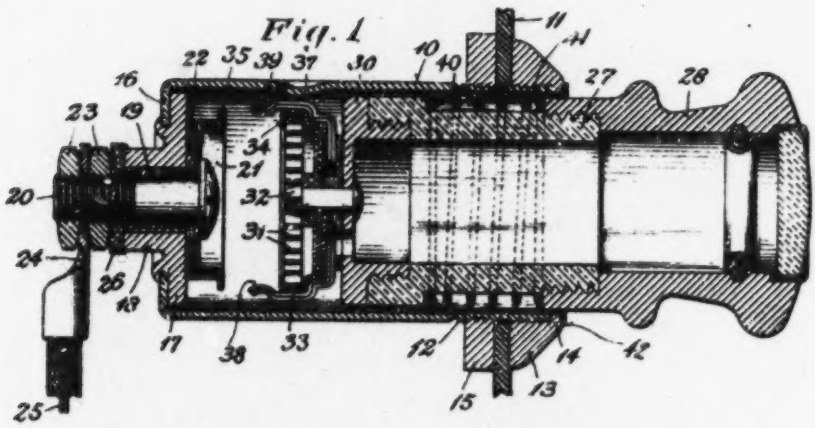


Fig. 2

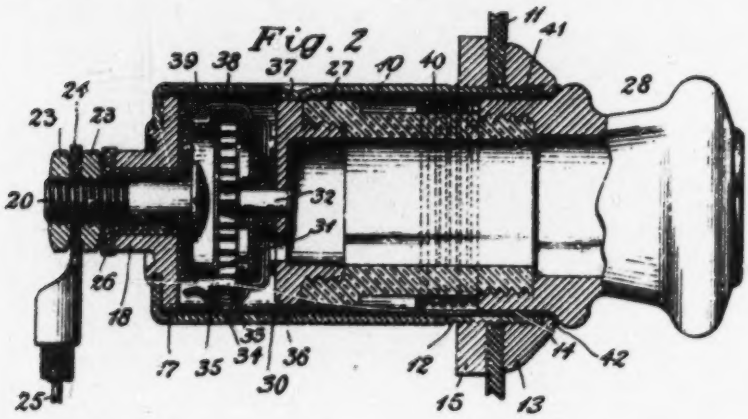


Fig. 3

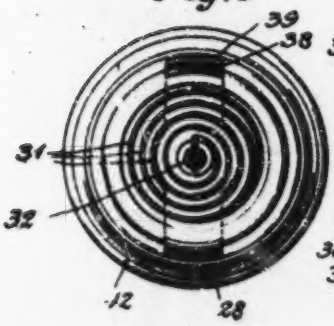
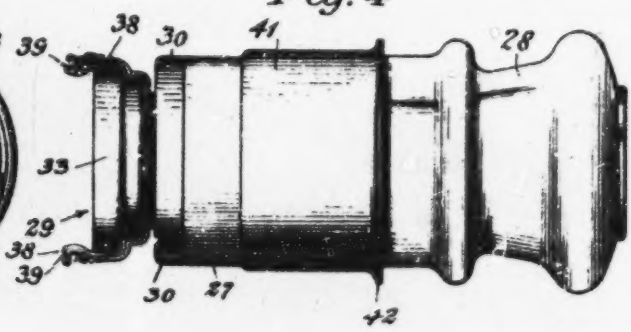
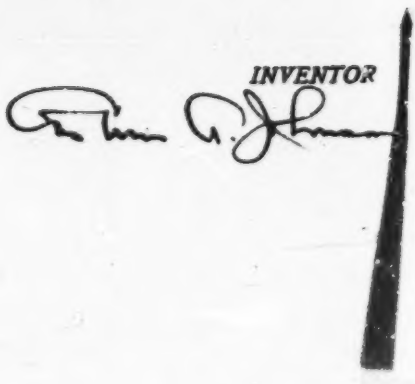


Fig. 4



INVENTOR



UNITED STATES PATENT OFFICE

2,129,374

ELECTRIC CIGAR LIGHTER

Arthur A. Johnson, Bridgeport, Conn., assignor to Automatic Devices Corporation, Bridgeport, Conn., a corporation of Connecticut

Application August 17, 1934, Serial No. 740,266

3 Claims. (Cl. 219—32)

his invention relates to electric cigar-lighters, is concerned particularly with the type of r-lighter in which the igniting unit is comely separable and removable from a holding ce or base for use.

With such cigar-lighters, the igniting unit is unted in or on a holding device and has a mal position thereon, wherein an electric cir- including the heating element is interrupted. bring the igniting unit to incandescence for it is moved relatively to the holding device close the circuit, and upon becoming incancent the igniting unit is removed and the indescent heating element is applied to the end cigar or cigarette to ignite the same.

Heretofore, it has been proposed to latch the iting unit in energizing position and retain it ntil the heating element is ready for use. For purpose, a bimetallic latch was employed on holding device and in heat-conducting rela- with the heating element so as to become perative when the heating element became hot ugh for use, at which time means, usually ng means, became effective to move the ignit- unit out of energizing position.

n object of the present invention is to improve type of cigar-lighter to make it more accuely responsive to the temperature of the heat- element, and to this end the present invention vides the bimetallic and thermal responsive h on the igniting unit rather than on the ding device, so that heat from the latter is re quickly and accurately transmitted to the metallic latch than was possible with the lat- mounted on the holding device.

With the heat-controlled cigar-lighters heretoe suggested, should the bimetallic latches beme inoperative or otherwise fail to perform ir intended functions, it was necessary to reve the holding device which is usually mounted permanent position, as, for instance, on the hboard of an automobile, and substitute a holding device with a properly functioning thermostatic catch.

With the device of the present invention, wherein the thermostatic catch is carried by the igniting unit, should the catch fail to function properly, a new igniting unit may be substituted for the old.

According to the present invention, the thermostatic catch may be mounted on any convenient or suitable portion of the igniting unit, but preferably it is mounted on the heating element itself, and since the heating element is removably mounted on the body of the igniting unit, should the thermostatic catch become out of order, it is merely necessary to discard the old heating element and substitute a new one, thus saving the replacement of the igniting unit as a whole.

Other features and advantages will hereinafter appear.

In the accompanying drawing—

Figure 1 is a longitudinal sectional view of one form of the cigar-lighter of the present invention, showing the igniting unit supported in its normal non-energizing position.

Fig. 2 is a similar view, showing the igniting unit in energizing position.

Fig. 3 is an end view of the igniting unit shown in Figs. 1 and 2.

Fig. 4 is a side elevation of the igniting unit.

The type of cigar-lighter shown in the accompanying drawing is that having a tube-like holding device or base member 10 adapted to extend through an aperture in a support, as, for instan the instrument board 11 of an automobile. T end of the tube 10 has threads 12, and on portion thereof which extends beyond the ins ment board 11 there is provided a threaded 13 having a flange 14 for engaging the end of the shell 10. On the rear side of the instrument board the threaded portion 12 carries a nut 15 which, upon being tightened, clamps the instrument board between itself and the threaded disk 13. At its rear end, the holder-tube 10 has an inwardly extending flange 16 on which is secured a disk 17 having a boss 18. The boss 18 has an insulator sleeve 19 through which extends a screw 20, the head of which holds a contact disk 21 in place within the shell 10. The contact disk 21 is insulated from the disk 17 by an insulating washer 22. The outer end of the screw 20 carries nuts 23 between which a terminal 24 of a current supply wire 25 is secured. The inner nut 23 is insulated from the end of the boss 18 by an insulating washer 26.

Thus it will be seen that the shell 10 is mechanically and electrically connected to the instrument board 11 which is usually connected to one side of a current supply battery by a ground and that the contact disk 21 is insulated from the shell 10 and is normally alive, being connected with the current supply wire 25.

As in this type of cigar-lighter, the igniting unit of the present invention fits the shell 10 and is slid into the shell to be supported thereby in normal inactive position. In the form of the invention herein shown, the igniting unit comprises a body portion made up of a tubular portion 27 and a knob portion 28, either of which may be

made of metal or insulating material, as desired—the portion 27 being shown as made of nonmetallic material while the portion 28 is shown as made of metal.

At the inner end of the body of the igniting unit, there is removably mounted a heating element 29. This comprises a plug-like portion 30 which is screw-threaded into the inner end of the tubular portion 27, and mounted on the portion 30 is a resistance coil 31, which, upon being brought to incandescence, is applied to the end of a cigar or cigarette to ignite the same. As indicated in Fig. 3, the heating coil is in the form of a ribbon spirally wound and has its inner end secured to a stud 32, while its outer end is fastened to a cupped disk 33 and is in metallic and electrical contact therewith and secured to the portion 30 by the stud 32 but insulated therefrom. The inner end of the cupped disk 33 has a flange 34 located in alignment with a flange 35 of the contact disk 21. Hence, when the igniting unit is moved from the position shown in Fig. 1 to that shown in Fig. 2, the flange 34 engages the flange 35 and current is conducted through the part 33 to the outer end of the heating coil, and from thence through the coil to the stud 32 and plug-like portion 30 of the heating element.

Normally, the portion 30 is out of electrical engagement with the shell 10, but when the igniting unit is moved from the position shown in Fig. 1 to that shown in Fig. 2, the periphery 36 of the portion 30 moves into contact with a tongue 37 lanced from the shell 10 and bent inwardly into position to engage it, and thus the circuit is completed through the heating element and the ground.

According to the present invention, the igniting unit and heating element are held in the position shown in Fig. 2, that is to say, in energizing position, until the coil becomes incandescent and ready for use, by a thermostatically-controlled latch mounted on and carried by the igniting unit.

In the form of the invention shown herein, this is accomplished by providing on the heating element 29 a bimetallic strip 38, the ends of which are bent so as to form detents 39. The strip 38 is provided with a central apertured portion through which the stud 32 extends and is held in place in contact with the cupped disk 33 which carries the heating element.

When the igniting unit is moved from the position shown in Fig. 1 to that shown in Fig. 2, the detent portions 39 of the strip 38 snap over the flange 35 on the contact disk 21 and thus retain the heating element and igniting unit in the position shown in Fig. 2, against the tendency of a spring 40 engaging a flange on a sleeve 41 on the other side to return the igniting unit to non-energizing position. The sleeve 41 has a flange 42 engaging the disk 13 so that when the igniting unit is pushed into the position shown in Fig. 2, the spring 40 is compressed.

During the heating of the resistance coil, the heat is conducted through the cupped disk 33 to the bimetallic strip 38, and when the heating element becomes incandescent the expansion of the bimetallic strip is such that the detent portions 39 move from the positions shown in full lines in Fig. 4 to those shown in dotted lines, with the result that the flange 35 of the contact disk has disengaged and the spring 40 is allowed to return the heating element and igniting unit to the position shown in Fig. 1, at which time the igniting unit is removed from the holding device by the user and the heating coil can be applied to the end of a cigar or cigarette to ignite the same.

In the event that the bimetallic latches 38—38 become inoperative, it is merely necessary to remove the igniting unit from the holding device as though it were to be used, and, after unscrewing the heating unit from the portion 27 of the igniting unit body, the damaged heating element may be discarded and a new one substituted therefor.

Even in such cases where the heating element is not removable from the body portion of the igniting unit, the provision of the heat-responsive latches on the igniting unit is advantageous over the prior proposals where latches were carried by the holding device. For, in case the heat-responsive latch should become inoperative, it would not be necessary to disconnect the holding device either electrically and mechanically, from the instrument board, but merely necessary to discard the igniting unit and substitute a new one having the thermostatic element in proper working order.

In the use of the device, it may be that due to delay in the application of the heating element to the cigar end, the former is not sufficiently incandescent to ignite the cigar; yet, the thermostatic latches 38 may not have returned to gripping or latching position. To permit the user to again cause the heating element to become incandescent or to bring it to a higher degree of incandescence than is controlled by the thermostatic latches 38, the cooperating contacts 35 on the holding device and 34 on the heating element may be made to engage independently of the thermostatic latch 38 by the operator holding the igniting unit in energizing position by hand.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters-Patent, is:—

1. In a cigar-lighter, a base member; an igniting unit normally supported on but completely removable from the base member for use; a heating element mounted on the igniting unit for convenient removal and replacement; a circuit for conducting current to said heating element; manually operable means for closing said circuit to the heating element; and means carried by the removable heating element in permanent association therewith and responsive to the temperature of the heating element for opening said circuit.

2. In a device of the class described, a base member; an igniting unit supported on said base member for complete separation and removal for use; an electrical heating coil on said unit; means for moving said unit to an energizing position in which said coil is energized; means tending to withdraw said unit from said energizing position; and a thermostatic element carried by and permanently associated with the igniting unit and responsive to the heating of said coil for controlling the action of said withdrawing means.

3. In a device of the class described, a base member; a plug supported on said base member for complete removal for use; an electrical heating coil on said plug; means for moving said plug to an energizing position in which said coil is energized; means tending to withdraw said plug from said energizing position; and a thermostatic element in permanent metallic and electrical engagement with said heating coil and re-

sponsive to the heating of said coil for controlling the action of said withdrawing means.

4. In a heating element for cigar lighters having an igniting unit of the type removable from a holding device for use; a manually movable support; a resistance coil mounted on the support; and a bimetallic strip secured to and carried by the support permanently in heat-conducting relation with the resistance coil and having a latch portion formed on the end thereof.

5. In a heating element for cigar lighters having an igniting unit of the type removable from a holding device for use; a support provided with a hand grip at one end; a resistance coil mounted on the support; a bimetallic strip carried by the support and permanently secured in heat-conducting relation with the resistance coil and having a latch portion formed on the end thereof; and means carried by the support for mounting the heating element on an igniting unit and removing the same therefrom by hand without the use of tools.

6. In a cigar lighter, a base member; an igniting unit normally supported on and completely removable from the base member for use, said igniting unit being adapted to be disassociated from the base member and associated with another like base member; a heating element carried on the igniting unit; a circuit for conducting current to said heating element including a cooperating contact means on the base and igniting unit adapted to be engaged when it is desired to bring the heating element to incandescence for use; and cooperating means on the igniting unit and the base member to maintain the circuit closed until the heating element has been brought to incandescence, said last-named means including a heat-responsive latch carried by the igniting unit in permanent association with the heating element and arranged to open the circuit through the heating element when the latter attains a predetermined temperature regardless of the particular base member with which the igniting unit at that time is associated.

7. In a cigar lighter, a base member; an igniting unit normally supported on but completely removable from the base member for use; a heating element mounted on the igniting unit; a circuit for conducting current to said heating element; manually operable means for closing said circuit to the heating element; and means carried by the heating element in permanent association therewith responsive to the temperature of the heating element for opening the circuit.

8. A manually operable igniting unit comprising an elongated body having a heating element mounted on one end thereof and a bimetallic latch means clamped between the end of the body member and heating element and in heat-conducting relation with the heating element and extending forwardly thereof for engagement with a contact for completing a circuit through that element.

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Dec. 13, 1938. J. H. COHEN 2,140,311

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CIGAR LIGHTER

Original Filed July 23, 1932 2 Sheets-Sheet 1

Fig. 1

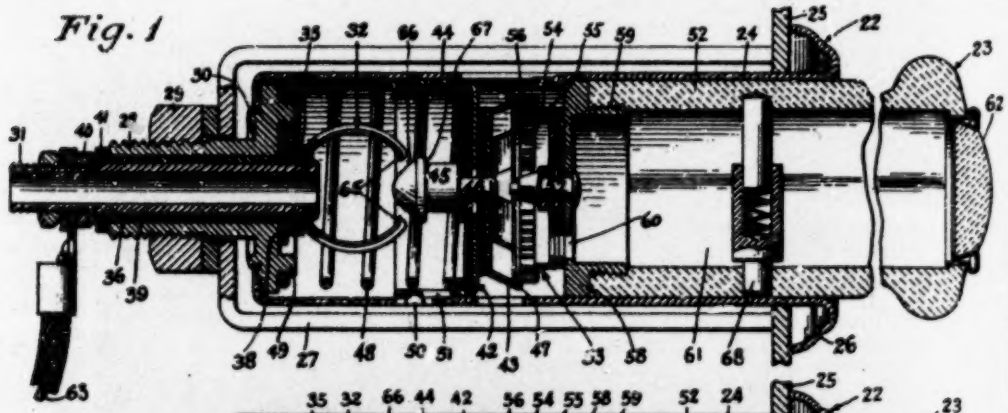


Fig. 2

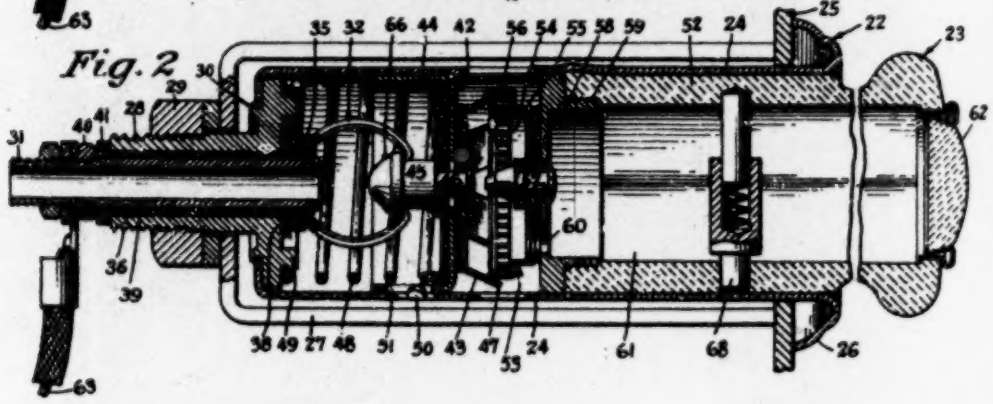


Fig. 3

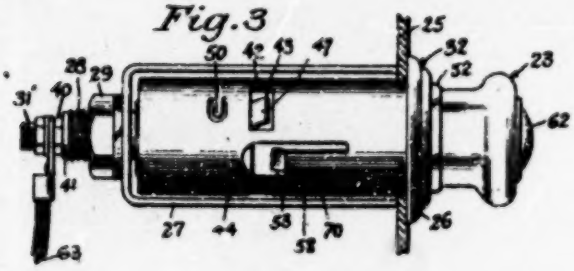


Fig. 4

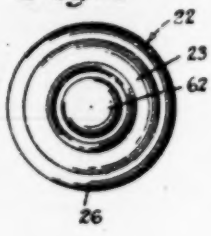


Fig. 5

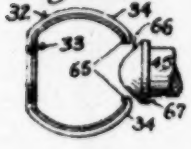


Fig. 6

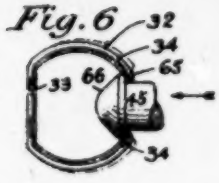
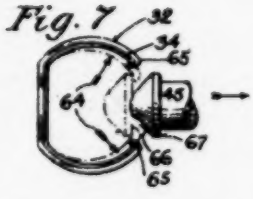


Fig. 7



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Dec. 13, 1938. J. H. COHEN 2,140,311

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CIGAR LIGHTER

Original Filed July 23, 1932 2 Sheets-Sheet 2

Fig. 8

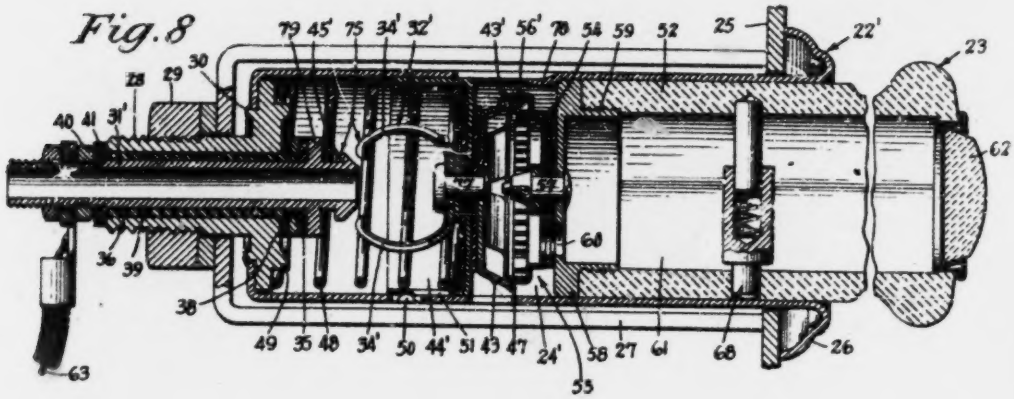


Fig. 9

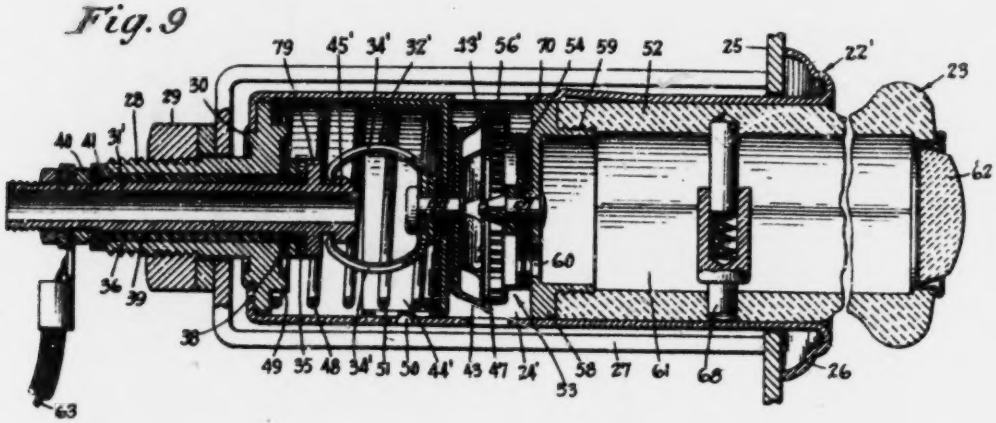


Fig. 10

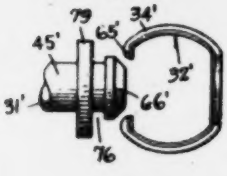


Fig. 11

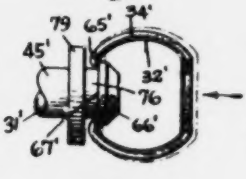


Fig. 12

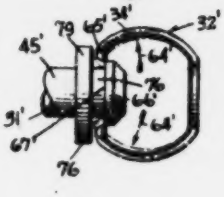


Fig. 13

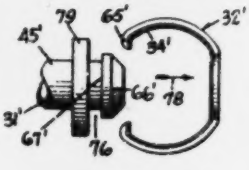


Fig. 15

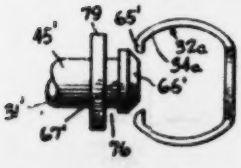


Fig. 16

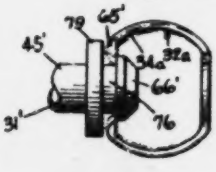
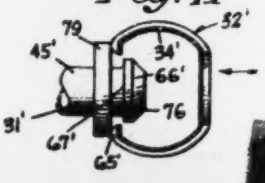


Fig. 14



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Patented Dec. 13, 1938

2,140,311

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UNITED STATES PATENT OFFICE

2,140,311

CIGAR LIGHTER

Joseph H. Cohen, Bridgeport, Conn., assignor to Automatic Devices Corporation, Bridgeport, Conn., a corporation of Connecticut

Original application July 23, 1932, Serial No. 624,193, now Patent No. 2,117,703, dated May 17, 1938. Divided and this application January 2, 1937, Serial No. 118,838

27 Claims. (Cl. 219—32)

This invention relates to electric cigar lighters, and more particularly to the type in which an igniting unit is completely removable from a holding device for use. Such cigar lighters are particularly desirable for use on motor vehicles.

An object of this invention is to provide an improved cigar lighter of the type referred to in which the current-supply circuit for the heating element of the igniting unit, after being closed as the result of manual engagement of a portion of the igniting unit which is accessible while the latter is supported on the holding device, is automatically maintained closed until the heating element is heated for use.

Heretofore it was proposed to do this by providing parts of the automatic control for the circuit, some on the holding device and some on the igniting unit, with the result that these separable parts had to be made to match each other in each particular cigar lighter for best results, and hence the igniting units and the holding devices, respectively, were not interchangeable with other like igniting units and holding devices.

According to the present invention, this difficulty is obviated by so arranging the means for automatically controlling the circuit supplying current to the heating element and restoring the circuit to normal open-circuit position, that they are carried entirely by solely one and the same of the two separable parts of the cigar lighter. With this new arrangement of such means, they remain in predetermined operative relation relative to each other in a single operative structure irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices, which is of great advantage in the manufacturing, installation and servicing of such cigar lighters.

Another feature of this invention is the provision of an improved circuit-controlling means for the cigar lighter comprising relatively movable members manually caused to be moved to close the circuit, detent means for holding the members in closed-circuit position, yielding means to restore them to open-circuit position, and heat-responsive means for controlling the return of the members to open-circuit position.

Preferably, though not always essentially, the heat-responsive means is in heat-receiving relation with the heating element and may advantageously be bimetallic and carry the detent means as well as surfaces contacting with surfaces on one of the relatively movable members to conduct current to the heating element. Also, the heating element, the relatively movable members, the detent means, the heat-responsive means, and the means for urging the members to open-circuit position, either all or some of these, preferably, though not always essentially, may be arranged in the part of the cigar lighter carrying them so as to be coaxial with each other. This construction makes for easy assembly of the parts and close nesting so that they may be contained safely conveniently within the part of the cigar lighter carrying them.

Another feature of this invention is the provision of means whereby the circuit through the heating element may be maintained closed by manual effort, even though the heat-responsive means has acted to open the circuit, so that the heating element may be reheated for a repeated use, without waiting for the heat-responsive element to cool sufficiently to itself close the circuit.

Other features and advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is a longitudinal sectional view of the cigar lighter of the present invention in normal inoperative position.

Fig. 2 is a view similar to Fig. 1, but with the cigar lighter in closed or operative position.

Fig. 3 is a plan view of the cigar lighter.

Fig. 4 is a front view.

Fig. 5 is a detail view showing the thermostatic catch of the present invention in the inoperative position.

Fig. 6 is a detail, similar to Fig. 5, but shows the catch in the operative position.

Fig. 7 is a view similar to Figs. 5 and 6, but shows the catch in its fully released condition.

Fig. 8 is a longitudinal sectional view, similar to Fig. 1, but with a modified form of catch and circuit closer, in the normal inoperative position.

Fig. 9 is a view similar to Fig. 8, but shows the parts in the operative position.

Fig. 10 is a detail view of the circuit closer and thermostatic catch of this form of the invention in the open inoperative position, similar to Fig. 8.

Fig. 11 is a detail view, similar to Fig. 10, but shows the catch in closed-circuit position.

Fig. 12 is a detail view, similar to Fig. 11, but shows the catch in its partially released position.

Fig. 13 shows the catch and circuit-closing parts returned to the open inoperative position.

Fig. 14 is a view similar to Fig. 13 of the invention showing the catch used to effect an auxiliary closing of the circuit even though the catch is thermostatically maintained in an open position.

Fig. 15 is a view similar to Fig. 10, but shows the catch and circuit closer parts made of regular material, rather than bimetallic material.

Fig. 16 is a detail view, similar to Fig. 15, in the closed-circuit position and about to be released.

This is a division of my application Serial No. 624,193, filed July 23, 1932, now Patent No. 2,117,703, issued May 17, 1938.

For convenience and clarity in the following description, the present invention is shown as applied to what may be termed "sleeve-type" cigar lighters for use with automobiles, similar to the lighter disclosed in my Patent No. 1,944,925, issued January 30, 1934, but it should be understood that it may also be used with other types of cigar lighters. Broadly, the cigar lighter comprises a holding device or base member 22 and a removable igniting unit 23 which may be mechanically and electrically separated from the base member for use.

The base member 22 comprises a socket 24 adapted to be passed through a suitable aperture in an instrument panel 25 of an automobile, or other convenient location, until a flange 26 at the front end thereof engages with the front face of the panel. The socket is rigidly secured in place with a U-shaped yoke 27 fitted over an outer sleeve 28 and a clamping nut 29. The outer sleeve is preferably rigidly secured to the socket 24 by a spun-over flange 30.

A contact-carrying sleeve 31 is insulatedly mounted in the outer sleeve 28, and at its forward end there is secured a main contact 32 having a main body portion 33 shaped similar to a washer and one or more integral hook-shaped fingers 34 extending therefrom. The contact carrier sleeve is secured in place by passing a washer 35 and tube 36 of insulation over the contact sleeve 31, passing an insulating washer 38 over the insulating sleeve 36, and then passing the entire assembly through a bore 39 of the outer sleeve 28, where it is rigidly secured to the latter part with the nut 40 and insulating washer 41. These various parts of insulation just described prevent electrical connection between the contact sleeve 31 and outer sleeve 28 and are preferably made of mica in order to be heat resisting.

The base member is completed with a relatively movable member or slide 42 which carries an intermediate contact 43. This slide comprises a cup or sleeve 44 which has a free fit within the socket 24. Near its center the cup is provided with a contact and catch stud 45 which is insulated from the cup by suitable insulating washers. It is held in place by spinning or otherwise heading-over the end of the shank 46, and when this is done a contact washer with yielding fingers 47 forming the intermediate contact 43 is secured to the cup so that current may be passed from the contact 45 to the fingers. The cup also serves to hold a spring 48 in the socket 24, free from the side walls at one end, while the other end of the spring is located in the socket by a shoulder portion 49 of the outer sleeve 28. Longitudinal movement of the slide 44 is limited in two directions by a lanced finger 50 part of the socket 24 being bent into and engaging the ends of a slot 51 in the cup.

The removable igniting unit 23 comprises a body 52 preferably made of Bakelite or some similar insulating material of a size to slide freely in the socket 24. At one end it supports a heater unit 53 comprising a spirally wound heating coil 54 in a cup 55. One end of the heating coil is connected electrically to the outer wall of the shell by means of a ring 56 which is spun thereover and the other end of the coil is connected to a stud 57 at a slot in the latter. This stud passes through a suitable hole in the shell 55 and is insulated from the latter with suitable insulating washers. It is mechanically and electrically secured to a ring 58 which has a threaded connection 59 with the igniting unit body. The heater unit 53 is provided with a series of holes 60 which allow the incandescent glow of the heating coil to pass through a bore 61 of the body 52 to the front end of the igniting unit 23 where they are magnified and projected by means of a ruby glass 62, or by a disk of Catalin or similar light-conducting material.

The wiring circuit for the cigar lighter comprises a ground connection through the instrument panel 25, flange 26 and the yoke 27 extending one side of the car battery circuit to the socket 24 portion of the base 22 and the other pole of the circuit comprises a wire 63 from the battery connected to the contact sleeve 31 and rigidly secured thereto with a nut.

Now, of particular importance, the cigar lighter is, according to the present invention, arranged to prevent an excessive drain on the battery, and to lessen the amount of attention required from the driver. To this end, there is provided a novel catch for holding the igniting unit in energizing position and a novel circuit closer switching arrangement for automatically controlling the circuit between the movable contact stud 45 and the stationary main contact 32.

This special catch and thermostatically controlled switch is, according to the present invention, made as a unitary structure; that is, both are embodied together and it is thereby possible to effect a marked economy in the cost of manufacture, because fewer parts are required and a single assembly and adjustment takes care of both the catch and the thermostatically controlled switch. In its present preferred form this combined catch and thermostatically controlled switch comprises the main contact 32, made of bimetallic material in order to be responsive to thermal conditions of the latter. The fingers thereon are of narrow width and slightly bowed so that there is a marked tendency for these fingers to spread or to open up in the direction of the arrows 64 in Fig. 7 to the solid line position shown in the latter figure under the influence of heat.

These fingers are provided with hooks 65 at their outer ends which are adapted to engage with a bevel 66 on the front end of the main contact stud 45 and be forced apart thereby and then snapped in back of a shoulder 67 portion of the stud when the sliding sleeve is pushed toward the bottom of the socket into position shown in Fig. 2.

The contact finger hooks 65 thus positively lock the sliding sleeve 44 in the closed position and at the same time complete an electrical connection from the main contact sleeve 31, contact 32 and the stud 45 to the intermediate contact disk 43 and also through the ring 58 and stud 57 of the removable igniting unit 23 to complete the circuit to the heating coil 54 to energize the coil and bring it to incandescence.

As the heating coil 54 is brought to incandescence some of the heat is radiated from the front face of the coil against the inside of the disk 43 and follows through the ring and contact figures 47. As the fingers are heated in this manner some of the heat follows through to the stud

45 and fixed contact fingers 34, and at the same time heats the air within the chamber formed by the socket 24 and shell 44, to cause the contact fingers to expand gradually in the direction of the arrows 64 (see Fig. 7) until the hooks 65 move clear or free of the shoulder 67 whereupon the spring 48 is free to again move the sliding sleeve 44 forwardly in the socket 24 until the movement is stopped by the lanced ear 58 engaging an end of the slot 51 as shown in Fig. 1. At the same time it pushes the removable igniting unit 23 forwardly in the socket and moves the contact 45 of the switch into open circuit or deenergizing position shown in Figs. 1, 5 and 7.

As will be seen from Figs. 1 and 2 of the drawings, all of the elements of the switching means are carried entirely by one and the same part of the cigar lighter, herein illustrated as the holding device or base member, in coaxial alignment with one another and with the heating element. This enables the switch unit to be readily assembled within one of the parts of the cigar lighter.

It should also be noted that the particular form of switching unit and contacts provided therefor by the present invention have the very desirable advantage of making it unnecessary for the operator to twist, push, or in any special manner rotatably align the removable igniting unit 23 relative to the base 22 when returning the unit to the inoperative position on the base, or to do any involved twisting or aligning when it is desired to move the removable igniting unit into the operative or energizing position. It is merely necessary to put the plug 23 into the socket 24 when placing one within the other and merely necessary to push against the end of the igniting unit in order to move it to energizing position.

Normally the igniting unit 23 is in the position shown in Fig. 1 for the driver or other occupant of the car, after using the unit, merely slides it into the socket 24 until the cup 55 and ring 56 thereon engages with the spring contact fingers 47 of the slide 42. The pressure of the spring 48 on the sliding member serves as a stop or indication that the unit has been slid fully into the inoperative position. A spring plunger 68 is located in the plug body 52 to impinge against the bore of the socket 24 and prevent the igniting unit 23 from working out of the socket even though the car vibrates badly.

When it is desired to use the cigar lighter the driver merely grasps the knob which is an accessible portion of the igniter unit body 52 and pushes it and the movable contact-carrying member deeper into the socket against the pressure of the yielding spring 48 whereby the bevelled end 66 of the contact 45, as the contact-carrying member slides in the socket 24, engages with the hooks 65 to spread the fingers 34 until the hooks snap over the shoulder 67 as shown in Fig. 6, to lock the sliding unit in the back and switch closing position. Preferably a long finger 70 is lanced inwardly of the socket 24 with a raised portion adapted to engage and complete electrical connection between the socket 24 and igniting unit if the bore of the socket becomes worn considerably. The operator may then release his grip on the igniting unit and again use both hands for driving while the coil 54 is being heated to incandescence.

As the coil comes up to heat, some of the heat travels through the stud 45 and gradually moves the fingers of the bimetallic contact member to open position while the hooks thereon ride over the shoulder portion 67 of the stud 45 until a release between the shoulder and hooks is effected and the igniting unit moved back into the inoperative position shown in Fig. 1 under the influence of the sliding sleeve 44 and spring 48. Thereafter, the driver pulls the lighter from the socket for use.

The light disk 62 as the outer end of the igniting unit 23 serves to transmit an incandescent glow from the heater coil and warn the operator that the lighter is in condition for use.

In Figs. 8 to 13 inclusive, there is shown a modified form of the present invention. The removable igniting unit 23 in this form of lighter is exactly the same as that shown in the first form of the invention. The holding device or base member 22', however, while like the base member 22 of the preferred form of the invention in many respects is provided with a different form of catch and switch unit 75 comprising a contact stud 45' made integral with a contact sleeve 31' and a sliding sleeve 44' is arranged to support and carry a yielding bimetallic contact member 32' with bowed fingers 34' and hooks 65'.

The fingers 34' and hooks 65' are normally in the closed position shown in Fig. 8, and are adapted to ride over a bevel 66' on the end of the contact sleeve 31' and hook into a groove 76 in back of the shoulder 67', as shown in Figs. 9 and 11. With this form of the present invention, as with the preferred form, it is merely necessary for the operator to push the igniting unit 23 longitudinally into the bore of a socket 24' portion of the base 22' until the hooks snap into the groove 76 whereupon current is conducted to the outer end of the heater coil 54 through the stud 77, contact fingers 43', and ring 56', the circuit being completed by the closed line between the panel 25, shell 24', ring 58, and stud 57 to the inner end of the coil.

When the switch 75 is closed and as the heater coil is brought to incandescence the spring contact fingers 34' and hooks 65' gradually open from the position shown in Fig. 11 in the direction of the arrow 64' and into the position shown in Fig. 12 until the hooks are free of the shoulder 67' portion of the groove 76, whereupon the sliding unit and hook carried thereby, under the influence of the spring 48, travel in the direction of the arrow 78 shown in Fig. 13 to move the igniting unit again into the inoperative position shown in Fig. 8.

This modified form of the present invention has the advantage of making it possible for the operator to manually manipulate the lighter to obtain a further degree of incandescence without waiting for the main contacts 32' to cool and resume their normal closed position, and to this end there is provided an auxiliary contact or flange 79 which contacts with the ends of the hook 65' when the igniter is pushed the full extent toward the back of the base member as shown in Fig. 14.

In Figs. 15 and 16 there is shown a further modified form of the present invention comprising a yielding contact member 32a, having fingers 34a similar to and arranged to ride over the bevel 66' and snap into grooves 76 in much the same manner as the contact member 32', shown in Figs. 10 and 11, or the contact members 32 shown in Figs. 5 and 6. The parts are proportioned to expand the arms as the heater coil is brought to the desired degree of incandescence. This form of yielding contact member may be used in order to effect greater manufacturing

economy and it may be more advantageous than the bimetallic form in lighters which are brought to incandescence only slowly, or if the cigar lighter construction is such that there is a quick flow of heat from the heater coil to the yielding contact member; in other words, where it is desired to have a slowly responsive device.

Other variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters Patent, is:—

1. In an electric cigar lighter, the combination of a base member; a unit removably supported by the base member; a heating coil on said unit; a circuit for said coil; a slide in said base member, and with the aforesaid unit, movable into operative and inoperative positions thereon; a shouldered stud and a hooked arm on said base and slide members respectively adapted to hold the slide and movable unit in the operative position and to close the circuit to the heating coil, said arm being adapted to move into an open and circuit-breaking position relative to the shouldered stud in response to the increase in temperature of the heating coil; and means for conducting current from the hooked arm to the heating coil when it is in the thermally opened condition and the movable unit is manually moved to operative position.

2. In an electric cigar lighter, the combination of a base member; a unit removably supported by the base member; a heating coil on said unit; a circuit for said coil; a slide in said base member, and with the aforesaid unit, movable into operative and inoperative positions thereon; a detent adapted to hold said slide in the operative position and to close the circuit to the heating coil, until the coil has been heated a predetermined extent whereupon it opens and allows return of the slide to inoperative position and opens the circuit; and means for effecting an auxiliary closing of the circuit through said detent while it is in its thermally open condition and the movable unit is manually maintained in operative position.

3. In an electric cigar lighter, the combination of a base member; a socket on the base member; a plug removably mounted in the socket and longitudinally movable in said socket to a shallow inoperative position and into a deep operative position; a heating coil on said removable plug; means adapted to move the removable plug in the socket from the deep operative position to the shallow inoperative position preparatory to removal and use; and thermal responsive means in axial alignment with the plug for restraining said last-named means until the heating coil reaches a predetermined temperature.

4. In an electric cigar lighter, the combination of a base member; a unit removably supported by the base member, and movable thereon into an operative and into an inoperative position; a heating coil on said unit; a circuit for said coil; a cooperating shouldered stud and hooked arm responsive to the temperature of the heating coil in said circuit, said arm being adapted to move into an open and circuit-breaking position relative to the shouldered stud in response to the increase in temperature of the heating coil; and means for conducting current from the hooked arm to the heating coil when said arm is in the thermally opened condition and the movable unit is manually maintained in operative position.

5. In a cigar lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit including the heating element to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit outwardly of the holder and partially ejecting the same when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element; and means for maintaining the igniting unit on the holder in partially ejected position against casual removal, the means last-mentioned including a spring-pressed plunger carried by and extending across the igniting unit.

6. In a cigar lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit including the heating element to heat the latter for use; a spring actuated ejector placed under tension when the igniting unit is moved to circuit-closing position for moving the igniting unit outwardly of the holder; and means responsive to the temperature of the heating element and in axial alignment with the same for restraining said ejector and releasing the same when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element.

7. In a cigar lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit including the heating element to heat the latter for use; and means, including means responsive to the temperature of the heating element and a spring actuated ejector, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said ejector being placed under tension when the igniting unit is moved to circuit-closing position, and having a locking member engaged by the temperature responsive means to be restrained by the latter until the heating element attains said predetermined temperature, said locking member and temperature responsive means being metallic and constituting part of the current supply circuit to the heating element and electrically disengaging each other at said predetermined temperature to open the circuit to the heating element.

8. In a cigar lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit including the heating element to heat the latter for use; and means, including means responsive to the temperature of the heating element and a spring actuated ejector, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the

heating element, said ejector being placed under tension when the igniting unit is moved to circuit-closing position and having a locking member engaged by the temperature responsive means to be restrained by the latter until the heating element attains said predetermined temperature, said locking member and temperature responsive means being metallic and constituting part of the current supply circuit to the heating element and electrically disengaging each other at said predetermined temperature to open the circuit to the heating element, said locking member and temperature responsive means being shaped to be again electrically engaged without mechanically interlocking while the temperature responsive means is still in releasing position.

9. In a cigar lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit, including the heating element to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said temperature responsive means being metallic and constituting a part of the current supply circuit and being movable to open the circuit when the heating element attains said predetermined heat; and means for electrically engaging said temperature responsive means when in circuit-opening position to again close the circuit whereby the temperature of the heating element may be raised above said predetermined temperature.

10. In a cigar lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit, including the heating element to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said temperature responsive means being metallic and constituting a part of the current supply circuit and being movable to open the circuit when the heating element attains said predetermined heat; and means operative by movement of the igniting unit relative to the holder when the temperature responsive means is in circuit-opening position, to again close said circuit whereby the temperature of the heating element may be raised above said predetermined temperature.

11. In a cigar lighter, a holder; an igniting unit mounted on the holder and removable therefrom for use; a contact-carrying element mounted in the holder for sliding movement between limits; a contact on the holder; a contact on the contact-carrying element adapted to be moved into engagement with the contact on the holder by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holder to close an electrical circuit; detent means engaging said contact-carrying element for holding the contacts in engagement; heat-responsive means for releasing the detent means to open the circuit; and means for normally urging the contact carried by the contact-carrying element into open-circuit position.

12. A replaceable heating element for the rear end of an igniting unit comprising a coil of resistance wire; a cup-shaped contact member around said coil into which the outer end of the coil is secured; another cup-shaped member axially but oppositely secured to the first with a layer of insulating material between their adjacent bases; means for clamping the cup-shaped members together, the inner end of said resistance wire being secured to said clamping means; screw threads fixedly secured on the outer surface of said second-mentioned cup-shaped member for cooperation with threads on the inside of the rear end of an igniting unit; and a peripheral electrical contact flange integral with the second-mentioned cup-shaped member substantially aligned with the base portion thereof and extending radially outwardly beyond the sides of both cup-shaped members.

13. An igniting unit for a cigar lighter comprising a hollow body portion of insulating material; a heating element on the rear end of said body and including a coil of resistance wire; a cup-shaped contact member around said coil and to which the outer end of the coil is secured; another cup-shaped member axially but oppositely secured to the first with a layer of insulating material between their bases; means clamping said cup-shaped members together, the inner end of said resistance wire being secured to said clamping means, the outer surface of the walls of said second-mentioned cup-shaped member being provided with screw threads which are fixedly secured thereto engaging cooperating screw threads on the inside of the rear end of said insulating body; and a peripheral electrical contact flange integral with the second-mentioned cup-shaped member substantially aligned with the base portion thereof extending radially outward beyond the sides of both cup-shaped members and contiguous with the rear end of the body, a friction device in front of the peripheral flange biased to a position radially outside of the body for cooperation with the inner surface of a holding device.

14. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removable from the holding device for use and having a heating element thereon, a pair of relatively movable members; means for normally urging the members apart; means carried by each of said members and cooperating to close a circuit through the heating element when moved into engagement with one another when said members are moved toward one another by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device; and heat-responsive means for holding the movable members in closed-circuit position until the heating element has attained its desired usable heat, said members, the circuit-closing means carried thereby, the urging means, and the heat-responsive means being entirely carried by solely one and the same of the said two parts of the cigar lighter, so as to remain in predetermined operative relation relative to each other in a single operative assembly irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices.

15. A cigar lighter having two parts one con-

stituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members; means for normally urging the members apart; cooperating circuit-closing means mutually carried by the members; manually operable means for moving said members toward one another into position to close a circuit through the heating element, said circuit-closing means including heat-responsive means in heat-receiving relation with the heating element for opening the circuit when the heating element has attained its desired usable heat; and auxiliary contact means to close said circuit when the heat-responsive means is in open-circuit position and said parts are held together manually.

16. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit longitudinally slidable in the holder and removable therefrom for use, said igniting unit having a heating element thereon, a pair of longitudinally movable elements for closing a circuit through the heating element; means for normally urging the elements into an open-circuit position; means for longitudinally moving one of the elements with respect to the other against said urging means and into closed-circuit position by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device; and heat-responsive latch means for maintaining the elements in closed-circuit position against the action of the urging means until the heating element has attained its desired heat, said movable elements, urging means, and heat-responsive latch being entirely carried by solely one and the same of the said two parts of the cigar lighter, so as to remain in predetermined operative relation relative to each other in a single operative assembly irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices.

17. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a shouldered stud contact and a hook contact thereon relatively movable with respect to the shouldered stud and into engagement therewith to close an energizing circuit through the heating element; and manually operable means for moving the contacts into closed-circuit position, the hook contact being heat-responsive and in heat-receiving relation with the heating element and adapted to hold the circuit closed until the heating element has attained its desired heat.

18. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members, one of said members carrying a shouldered stud contact and the other a cooperable heat-responsive latch contact in longitudinal alignment with the shouldered stud contact; and means for moving by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device one of said members longitudinally of the part for causing the contacts to become engaged and close a circuit through the heating element, the heat-responsive latch being disposed behind the shoulders of the stud for holding the movable members in circuit-closing position until the heating element has attained the desired usable heat.

19. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members, one of said members carrying a shouldered stud contact and the other a cooperable heat-responsive latch contact means operated by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device for moving one of said members longitudinally of the part for causing the contacts to become engaged and close a circuit through the heating element, the heat-responsive latch engaging the shoulders of the stud and holding the members in circuit-closing position until the heating element attains the desired heat and then releases the stud contact and opens the circuit; and auxiliary means to again close the circuit through the heating element upon said members being manually held in closed-circuit position while the heat-responsive latch is in thermally open-circuit position.

20. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of coaxially disposed relatively movable members, means carried by each of the members and cooperating to close a circuit through the heating element when moved relative to one another to closed-circuit position; means normally urging the members into open-circuit position; and heat-responsive means in heat-receiving relation with said heating element, coaxial with the heating element and coaxial with the movable members, said heat-responsive means holding the movable members in circuit-closing position until the heating element has attained its desired usable heat.

21. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members, one of said members carrying a stud contact and the other a cooperable contact for claspingly engaging the stud contact and closing a circuit through the heating element when the contacts are moved into engagement with one another, the last-named contact being bimetallic and in heat-receiving relation with the heating element and moving to release the stud contact and open the circuit upon the heating element attaining the desired usable heat.

22. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members; means for normally urging the members apart; means including a shouldered contact on one of the members and a cooperating contact comprising yieldable jaws to grip the shouldered contact and engage the shoulder thereof on the other member cooperable to close a circuit through the heating element

moved into engagement with one another said members are moved toward one an- by manual engagement of a portion of the ing unit which is accessible while the ignit- unit is supported on the holding device, said being heat-responsive and disengaging and sing said shouldered contact upon being ng to a predetermined heat.

. A cigar lighter having two parts, one con- ing a holding device and the other an ig- g unit supported by the holding device but ovable therefrom for use, said igniting unit ng a heating element thereon and being ted for use with said holding device or an- r like holding device, a switch including a of contacts, one being relatively movable respect to the other to close a circuit through heating element; means for normally urging contacts into open-circuit position; means moving the contacts into closed-circuit posi- by manual engagement of a portion of the ting unit which is accessible while the ignit- unit is supported on the holding device; de- means for maintaining the circuit closed nst the action of the urging means; and heat- onsive means for releasing the contacts to action of the urging means upon the heating ent attaining its desired heat, said switch, nt means, urging means, and heat-responsive ns being entirely carried by solely one and same of said parts of the cigar lighter, so as emain in predetermined operative relation ive to each other in a single operative as- ly irrespective of the interchange of said ing unit or holding device with other like ing units or holding devices.

. A cigar lighter having two completely rable parts, one being a holder and the other niting unit supported by the holder but re- able therefrom for use and carrying a heat- lement; means for feeding energizing cur- to the heating element including cooperat- contacts on the holder and igniting unit; vitch having relatively movable contacts, ually operated means for closing said switch; hermostatically controlled means associated said switch and in heat-receiving relation the heating element for causing the switch opened when the heating element is ready se and to remain open until the next op- n of said manually operated means, said n and thermostatically controlled means be- ntirely carried by solely one and the same of aid two parts of the cigar lighter, so as to n in predetermined operative relation rela- o each other in a single operative assembly pective of the interchange of said igniting or holding device with other like igniting or holding devices.

. A cigar lighter having two parts, one of said being a holding device and the other of parts being an igniting unit supported by the g device but removable therefrom for use, gniting unit having a heating element there- cooperating contacts on the holding device and the igniting unit to normally establish circuit connections between the said two parts; and a switch for closing an energizing circuit including said contacts and heating element, said switch being movable to closed-circuit position by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device, thermostatically controlled and automatically restored to open-circuit position when the heating element has been heated for use, said switch being entirely carried by solely one and the same of the said two parts of the cigar lighter, so that all component parts of the switch remain in predetermined operative relation to each other in a single operative assembly irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices.

26. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably mounted on the holding device for use and having a heating element thereon, one of said parts having a pair of coaxially disposed relatively movable members; means carried by each of the members and cooperating to close a circuit through the heating element when moved relative to one another to a closed-circuit position by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device; means normally urging the members into open-circuit position; means for holding the movable members against said urging means when moved into closed-circuit position; and heat-responsive means coaxial with the movable members for releasing the holding means upon the heating element attaining a desired usable heat whereby the urging means moves the members into open-circuit position and maintains the circuit open until it is again manually closed.

27. A cigar lighter having two parts, one constituting a holding device and the other an igniting unit supported by the holding device but removable therefrom for use, said igniting unit having a heating element thereon and being adapted for use with said holding device or another like holding device, a switch including a pair of contacts, one being relatively movable with respect to the other to close a circuit through the heating element; means for normally urging the contacts into open-circuit position; means for moving the contacts into closed-circuit position by manual engagement of a portion of the igniting unit which is accessible while the igniting unit is supported on the holding device; detent means for maintaining the circuit closed against the action of the urging means; and heat-responsive means for releasing the contacts to the action of the urging means upon the heating element attaining its desired heat, said switch, detent means, urging means, and heat-responsive means being carried entirely and solely by the holding device.

JOSEPH H. COHEN.

PAGES 306 + 307

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(No Model.)

E. F. HAMMARSTRÖM.

308 COMBINED CUT-OUT AND LIGHTNING ARRESTER.

No. 493,380. Patented Mar. 14, 1893.

Fig. 1.

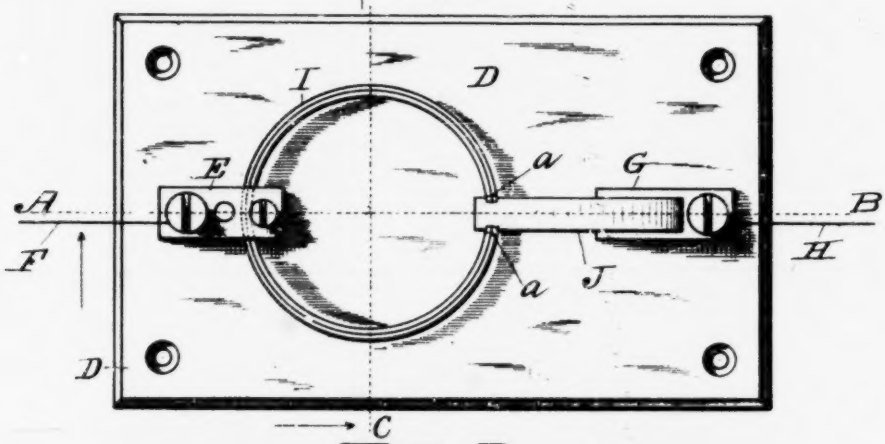


Fig. 2.

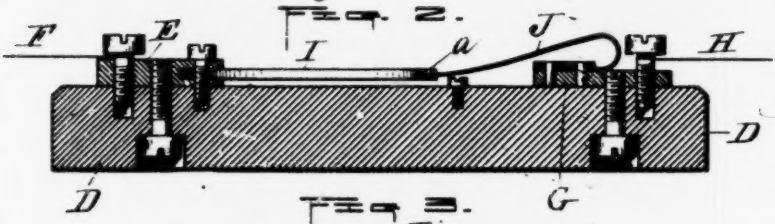
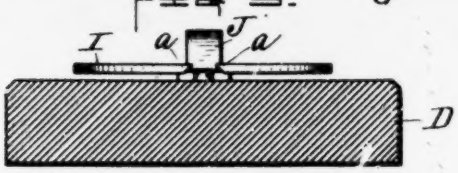


Fig. 3.



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UNITED STATES PATENT OFFICE.

ERNST FREDRIK HAMMARSTRÖM, OF STOCKHOLM, SWEDEN, ASSIGNOR OF ONE-FIFTH TO AXEL JUNGMARKER, OF WORCESTER, MASSACHUSETTS.

COMBINED CUT-OUT AND LIGHTNING-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 493,380, dated March 14, 1893.

Application filed June 3, 1892. Serial No. 435,445. (No model.)

To all whom it may concern:

Be it known that I, ERNST FREDRIK HAMMARSTRÖM, a subject of the King of Sweden and Norway, residing in the city and Province of Stockholm, Sweden, have invented certain new and useful Improvements in a Combined Cut-Out and Lightning-Arrester; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 represents a top or plan view of my improved cut-out and lightning arrester. Fig. 2 is a central, longitudinal section thereof, taken on line A. B. Fig. 1, and Fig. 3 is a transverse section taken on line C, Fig. 1.

The main object of my invention is to provide a cut-out and lightning arrester which may be tested at any time without renewal of any of the parts, which shall require renewal only at long intervals, and which shall be more sure and positive in its action than the usual cut outs and lightning arresters in which a fuse-wire is employed.

Said invention consists of an open bow-spring or ring composed of two different kinds of metal welded together and rigidly connected with a bearing on the main support, and with which bearing the main line wire is also connected; and of a light spring or latch connected with the other bearing, to which the wire communicating with the telephone or other electrical instrument connects, said spring or latch being adapted to engage at its outer end with the open ends of the aforesaid bow-spring or ring. The connection being broken through the expansion of the bow-spring or ring by an electric current of unusual power which releases the spring or latch, and by said disconnection, breaks the current without loss or injury to any of the parts.

In order that those skilled in the art to which my invention appertains may better understand the nature and purpose thereof, I will now proceed to describe it more in detail.

In the drawings, D represents the main support or back-board to which the device is secured.

E, is the bearing with which the main, line wire F connects, and G the bearing to which is attached the wire H, which communicates with the telephone or other electrical instrument.

The bow-spring I is preferably made in the form of a split ring; that is, cut apart transversely at one point, leaving an opening between the two ends *a a*, a little less in distance apart than the width of the spring J, whose outer end lies horizontally between the said two ends and is there held by the slight pressure of the bow-spring at each side thereof, until such time as said bow-spring shall be expanded to release said spring.

The parts are so adjusted that the usual strength of current employed for telephone and telegraph purposes may pass through uninterrupted, not being of sufficient strength or power to expand the bow-spring a sufficient distance to release the light spring which forms the connection with the other wire; but when a strong electric current comes in contact with the main line as is frequently the case in a thunder storm, it passes along the wire and when it comes in contact with the bow-spring, the powerful current causes said bow-spring to expand and releases the spring held between the two ends of said bow-spring, when said light spring flies up out of the way, and thereby, as will at once be seen, cuts off the farther progress of said strong current. The reason for said expansion of the bow-spring is on account of its being composed of two different metals, one outside of the other, as shown in the drawings, which are in practice welded together.

The inner ring of the completed, welded ring being composed of metal which has greater expanding power under heat than the outer one, consequently causes the two ends to be forced out laterally with the result above stated.

It will be observed that to re-connect the lines, it is simply necessary to force out the bow-spring and adjust the spring or latch in position, when the device is again in readiness for operation, without renewal of any of its parts, and at the expenditure of but little time or trouble. It will also be observed that the device may be tested at any time without

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the cost of renewal of any of the parts, said testing operation resulting simply in the disconnecting of the parts which may be readily connected again after said testing operation, as above described.

I have found in practice that the device will work with absolute certainty at a temperature much below that required for melting the usual fuse-wire in similar devices.

Having now described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

An improved electric cut-out, comprising in combination the main, line wire bearing E; the expansible open ring or bow-spring I attached at a convenient point between its ends to said bearing E; the spring-latch J attached to the other line-wire bearing G and adapted to be engaged with the ends of ring I to close the circuit, said circuit being broken through the expansion of said ring and release of the spring-latch by the electric current, substantially as and for the purpose set forth.

ERNST FREDRIK HAMMARSTRÖM.

Witnesses:
W. H. EDWARDS,
W. HAUPT.

D. K. MORRIS & G. A. LISTER.

ELECTRICAL SWITCH AND THE LIKE.

APPLICATION FILED SEPT. 22, 1908.

312

926,584.

Patented June 29, 1909.

2 SHEETS—SHEET 1.

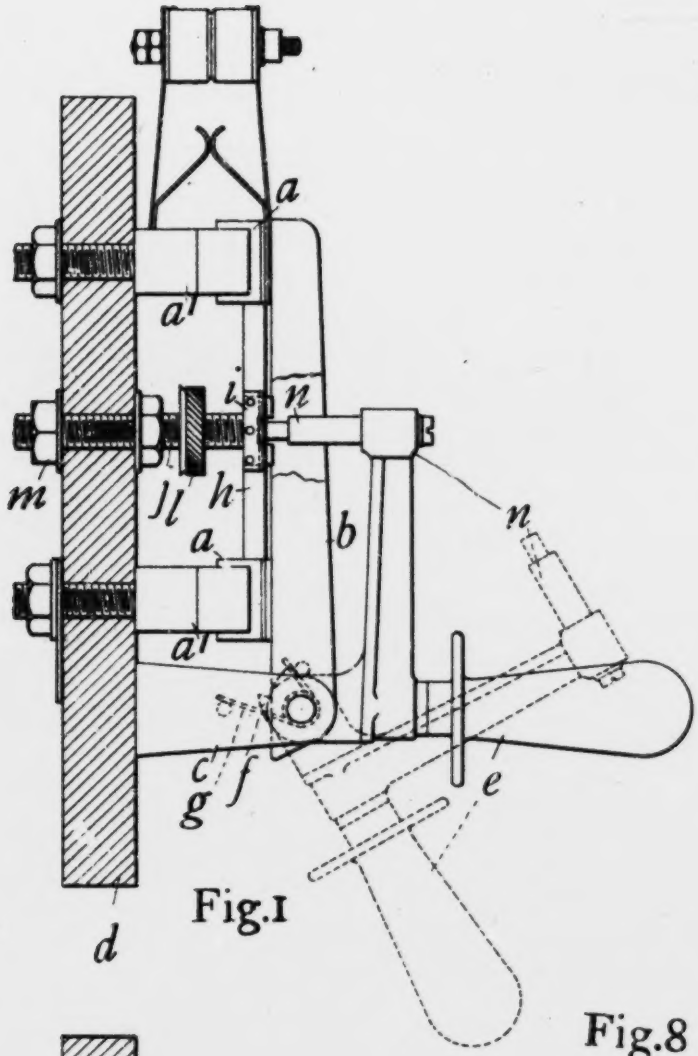


Fig.1

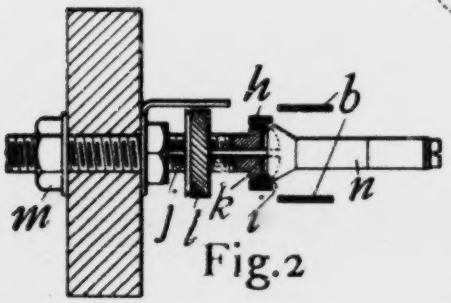
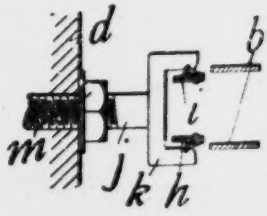


Fig.2

Fig.8



WITNESSES:

Edwd. Spring.

W. P. Burke

INVENTORS.

David King Morris,

George Anslow Lister.

By

Attys.

314

926,584.

D. K. MORRIS & G. A. LISTER.

ELECTRICAL SWITCH AND THE LIKE.

APPLICATION FILED SEPT. 22, 1908.

Patented June 29, 1909.

2 SHEETS—SHEET 2.

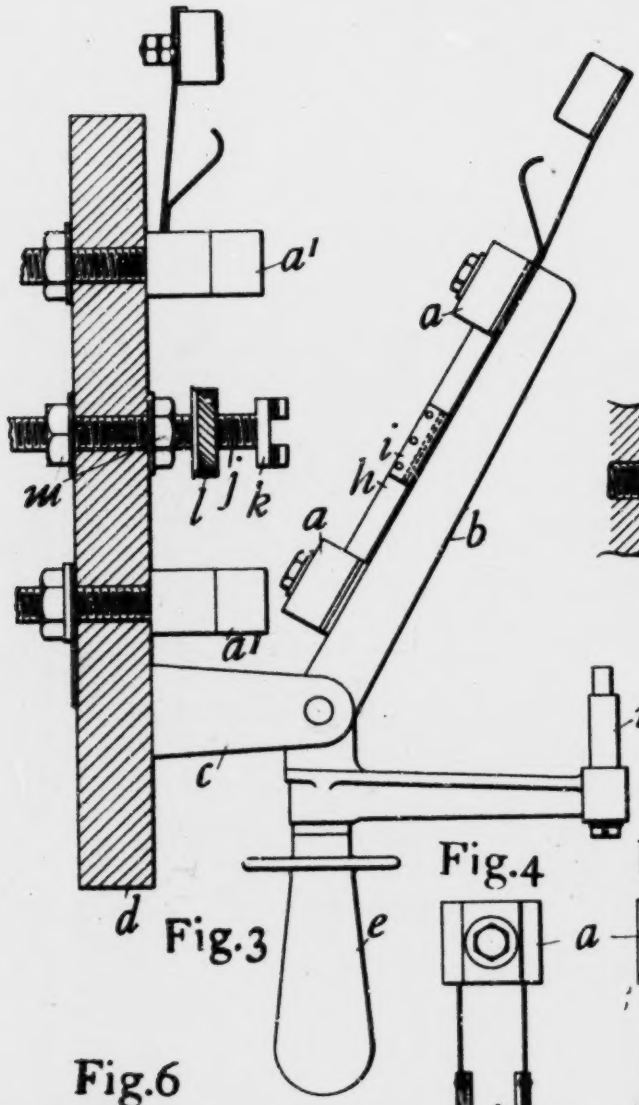


Fig.3

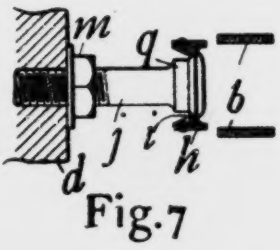


Fig.7

Fig.4

Fig.5

Fig.6

WITNESSES:

Edwd. D. Spring.

W. P. Burke

INVENTORS,

David King Morris.

George Anslow Lister.

By

Wallace & Mitchell

ATT'Y.

UNITED STATES PATENT OFFICE.

DAVID KING MORRIS AND GEORGE ANSLOW LISTER, OF COVENTRY, ENGLAND.

ELECTRICAL SWITCH AND THE LIKE.

No. 926,584. Specification of Letters Patent. Patented June 29, 1909.

Application filed September 22, 1908. Serial No. 454,247.

To all whom it may concern:

Be it known that we, DAVID KING MORRIS and GEORGE ANSLOW LISTER, subjects of Great Britain, residing at Carlton Works, Lockhurst Lane, Coventry, in the county of Warwick, England, have invented new and useful Improvements Relating to Electrical Switches and the Like, of which the following is a specification.

This invention relates to electrical switches and like cut-out devices, and has for its object to construct a simple and effective switch of the type in which automatic cut-out in the event of an overload or falling of the current below a predetermined value is effected by the operation of a thermal element.

The invention comprises the combination with appropriate contacts mounted on a movable arm, of a strip or strips rigidly connected with such contacts and adapted to expand or deflect laterally under the heating effect of a current passing therethrough, together with a fixed retaining piece or catch with which the said strip or strips can normally engage, the arrangement being such that with an excess or diminution of current (according to the purpose for which the switch is designed), the strip or strips disengage from the retaining piece and permit the contact arm to be swung away from the fixed contacts by a suitably arranged spring.

Referring to the two accompanying sheets of explanatory drawings:—Figure 1 is a side elevation and Fig. 2 a sectional plan showing in the closed condition a switch constructed in accordance with this invention. Fig. 3 is a side elevation of the switch in the open condition. Fig. 4 is a front elevation of the expansible contact strips, and Fig. 5 a similar view showing a modified configuration of the said strips. Figs. 6, 7 and 8, are diagrammatic plans showing modified constructions of catches or retaining pieces.

The same reference letters in the different views indicate the same or similar parts.

In the construction as illustrated of an automatic cut-out-switch designed for operating in the event of an overload, a pair of contacts *a* are secured to a supporting arm or lever *b* and one at least of the contacts is insulated from the arm. The latter is carried on a bracket *c* which is attached to the ordinary base or back plate *d* of the switch. Preferably such contacts are made of a wedge like formation and the corresponding fixed contacts or brushes *a'* on the switch back plate are laminated and the contacting edges inclined to correspond with the contacts on the movable arm.

The operating handle *e* may be fixed to the contact arm, or it may be arranged to act independently of the contact arm, any suitable and ordinary provision being made in the latter case to effect the required connection between the arm and handle in the opening and closing movements. In the example shown a lug or projection *f* is employed to effect the required connection between the two parts for the opening of the switch, the closing being effected as hereinafter described. In conjunction with the contact arm there is also provided a spring *g* for the purpose of breaking the circuit quickly.

Connection of the contact pieces *a* on the movable arm is effected by a pair of thermal elements comprising a pair of conducting elastic strips *h* secured rigidly at their extremities to the contact pieces *a* and thereby constrained to expand laterally under the heating effect of a current passing through the same. Each strip has secured to it, at about the center, a steel catch engagement piece *i*. The latter is fixed in position preferably by rivets to avoid brazing and consequent softening of such piece. The strips may be arranged parallel with each other as shown at Fig. 4, or they may be initially adjusted to take up the configuration shown in Fig. 5.

On the back plate *d* of the switch there is secured a catch or retaining piece comprising a screwed stem *j* having at its outer end an enlarged portion *k* which is grooved or shouldered along two of its edges for the reception of the engagement pieces *i* on the contact connecting strips *h* aforesaid. The catch and screwed stem may be slotted as shown and the two halves of the stem slightly separated so that by means of a nut *l* on the stem the distance between the grooved edges may be adjusted as desired. Adjustment with respect to the back plate may be effected by the nuts *m* whereby the catch is secured to such plate. When the switch is closed the engagement pieces *i* on the thermal elements spring into the grooves in the catch piece *k* and thereby retain the switch arm against the fixed contacts in opposition to the action of the spring *g* controlling the arm. The closing movement of the switch arm is arrested when the aforesaid engagement pieces lie opposite the catch grooves

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by the abutment of a projection *n* from the handle against the catch which is grooved across the front face as shown. The contact arm is advanced into its closed position by the abutment of the said projection *n* against the pieces *h* of the contact connecting strips. The projection *n* is not essential, but convenient with the form of catch shown in Figs. 1 to 3. With the catch shown at Fig. 7, to be hereinafter referred to, the projection *n* may be dispensed with.

In the event of an overload the strips are expanded laterally and the grip upon the catch is thereupon relaxed. The switch arm consequently swings into the open position under the influence of its spring *g*. The amount of overload required to operate the cut-out may be varied if required by adjusting the catch, or by the provision of a suitable shunt mounted on the arm *b*. When the switch or circuit breaker is of the loose handle type, the thermal strips expand enough not only to clear the catch but also the abutment piece or projection *n* on the handle, so that the circuit is broken even if the handle is forcibly held up in the switch closing position. As an additional safeguard against the possibility of the switch contacts being forcibly held up during an overload the device shown at Fig. 6 is sometimes adopted. The front end of the catch *k* is provided with a tapered recess *o* and the abutment piece or projection *n* from the handle is slotted or bifurcated and formed with a tapered or conical extremity *p* corresponding to the recess in the catch. When the strips *h* approach the grooves in the catch under the action of the projection *n* the part *p* is pressed into the recess *o* and the shoulders of the projection abutting against the strips are drawn together so as to diminish the breadth of contact with the pieces *i* of the strips *h*. The parts are proportioned to make the amount of contact between the shoulders of the abutment *n* and the pieces *i* of the strips *h* so small when the latter are in engagement with the catch that a relatively slight expansion of the strips will enable them to clear the abutment. This device is more especially suitable for a switch of small size.

In Fig. 7 is shown a simplified catch produced entirely by turning operations from a cylindrical bar. Such catch consists of a stem *j* formed with a circular head *q* behind an inclined shoulder of which the pieces *i* of the strips *h* can engage. When the switch is closed the spring *g* presses the pieces *i* against the said shoulder which is suitably inclined to assist the liberation of the strips *h* on the expansion of the same under the heating action of the current. With this form of catch any suitable and ordinary type of loose handle may be fitted on the arm *b*.

In the application of the invention to switches intended to open the circuit in the event of the current falling below a certain amount, the contact connecting strips are designed to expand sufficiently when carrying a normal current to engage with an appropriate catch piece. This arrangement is shown diagrammatically at Fig. 8, *j* being the stem, *k* the catch, and *i* the engagement pieces of the strips *h*. As soon as the current falls below the normal the strips leave the catch and the movable arm swings away as hereinbefore described.

In some cases the engagement pieces on the expansible connecting strips may be dispensed with, and the frictional grip of the strips on a catch or retaining piece formed with plain faces relied upon to hold the switch arm in its closed position.

Switches made as hereinbefore described are reliable in action and by their simplicity enable rigid and durable construction to be obtained. A further advantageous characteristic of our switches is the possession thereby of a time element or time lag, such that in the event of an overload the switches take an appreciable time to operate if the overload is small, but operate quickly when the overload is great. To insure relatively quick action of the switch in the event of only small overload, and also if the switch is designed for small currents only, it is desirable to use for the thermal elements a hard drawn material of high specific resistance.

Having thus described our invention what we claim and desire to secure by Letters Patent is—

1. In electrical switches and the like, the combination comprising a movable arm, contacts mounted on said arm, a laterally deflectable conducting strip rigidly connected at its ends with said contacts, and a fixed retaining piece with which said strip can coöperate for holding the arm in the closed position, substantially as set forth.

2. In electrical switches and the like, the combination comprising a movable arm, contacts mounted on said arm, a pair of laterally deflectable conducting strips rigidly connected at its ends with said contacts, and a fixed retaining piece with which said strips can coöperate for holding the arm in the closed position, substantially as set forth.

3. In electrical switches and the like, the combination comprising a movable arm, contacts mounted on said arm, a laterally deflectable conducting strip rigidly connected at its ends with said contacts, an engaging piece secured to said strip, and a fixed catch with which said piece on the strip can engage, substantially as set forth.

4. In electrical switches and the like, the combination comprising a movable arm, contacts mounted on the said arm, a pair of laterally deflectable conducting strips connected with said contacts, an engaging piece on each

ip, and a catch adapted for engagement by
h the said pieces on the strips, substan-
lly as set forth.

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nbination comprising a back plate, a mov-
e arm pivoted on said back plate, contacts
unted on said arm, a pair of laterally de-
table conducting strips connected with
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ing pieces on the strips, a spring adapted
wing the arm away from the catch on the
ase of the same by the engaging pieces,
a handle movable independently of the
, substantially as set forth.

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ing pieces on the strip, a spring adapted
wing the arm away from the catch on the
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dle movable independently of the arm,
an abutment piece on the said handle
adapted to press against the engaging pieces on the strips in the closing movement of the arm, substantially as set forth.

7. In electrical switches and the like, the combination comprising a back plate, a movable arm pivoted on said back plate, contacts mounted on said arm, a pair of laterally deflectable conducting strips connected with said contacts, an engaging piece on each strip, a catch adapted for engagement by both the said engaging pieces on the strips and formed at its front end with a tapered cavity, a spring adapted to swing the arm away from the catch on the release of the same by the engaging pieces, a handle movable independently of the arm, and a bifurcated abutment piece on the said handle adapted to press against the engaging pieces on the strips and also enter the tapered recess in the catch in the closing movement of the arm, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

DAVID KING MORRIS.
GEORGE ANSLOW LISTER.

Witnesses:
CHARLES E. HULSE,
E. PLAYER.

PAGES 318 + 319

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320

J. W. BURNETT.

CIGAR LIGHTER.

APPLICATION FILED APR. 13, 1910.

972,811.

Patented Oct. 18, 1910.

Fig. 1.

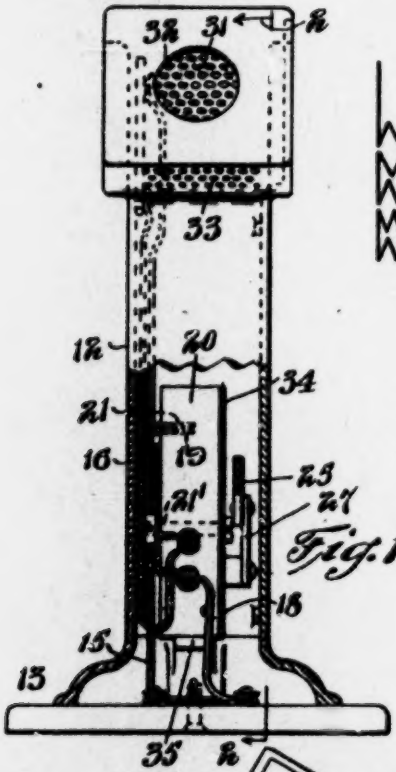


Fig. 7.

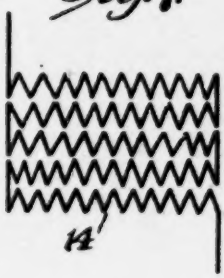


Fig. 2.

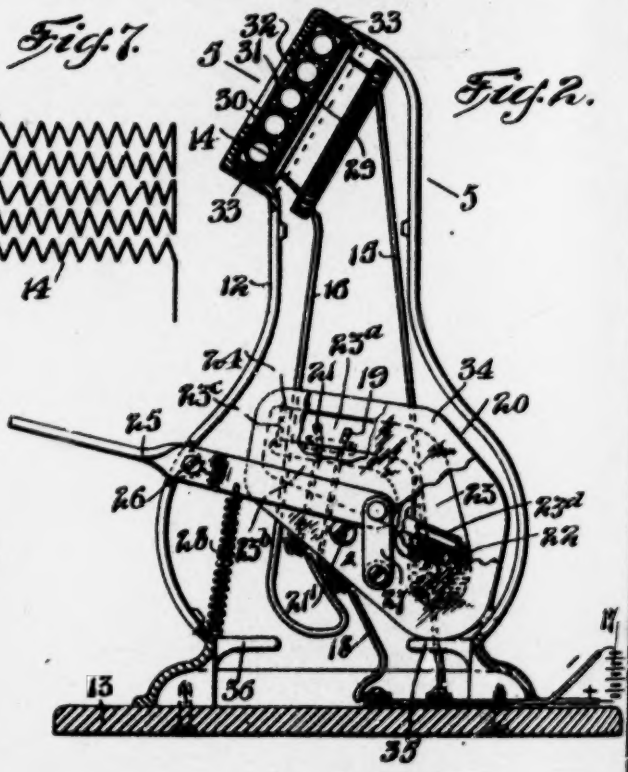


Fig. 3.

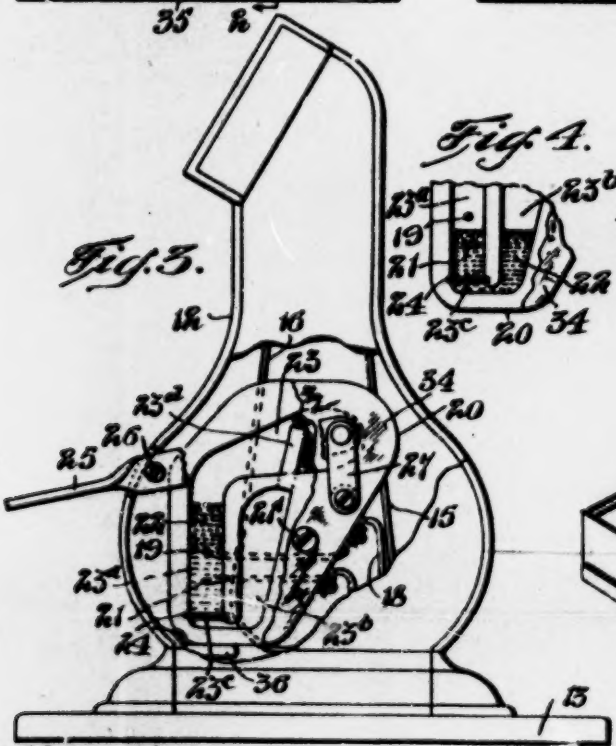


Fig. 4.

Fig. 5.

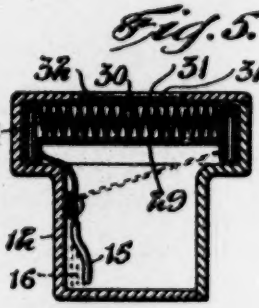
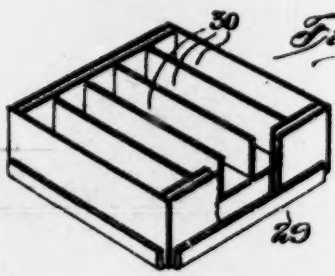


Fig. 6.



Witnesses:
C. F. Pulsifer
Harry L. Allen

John W. B...
by Wright Brown & ...

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operati
Fig. 4
of Fig.
automa
represe
Fig. 6
casing

UNITED STATES PATENT OFFICE.

W. BURNETT, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO WILLIAM K. MASON, OF CAMBRIDGE, MASSACHUSETTS.

CIGAR-LIGHTER.

321

811. Specification of Letters Patent. Patented Oct. 18, 1910.

Application filed April 13, 1910. Serial No. 555,222.

whom it may concern:

it known that I, JOHN W. BURNETT, mbridge, in the county of Middlesex State of Massachusetts, have invented in new and useful Improvements in -Lighters, of which the following is a fication.

is invention relates to a cigar lighter h comprises an electric resistance in- d in an electric circuit which is nor- y open, means being employed for clos- he circuit and rendering the resistance descent when it is desired to light a thereby. The resistance is usually osed of fine wire which is liable to be d out by protracted heating, thus ren- g the apparatus useless and requiring or less frequent renewals of the re- ce.

invention has for its object to pre- such prolonged heating of the resist- as will be liable to injure or destroy ame.

e invention is embodied in a cigar r comprising an electric circuit, a re- ce included therein, and a time switch is operable to close the circuit and atically breaks the circuit after a pre- mined period, so that after the resist- has been heated long enough to ignite ar, the circuit is broken, the arrange- being such that the circuit cannot be closed until sufficient time has elapsed terially reduce the temperature of the ance, so that prolonged injurious heat- f the resistance is impossible.

the accompanying drawings which a part of this specification Figure 1 ents a front elevation of a cigar embodying my invention, parts of ing being broken away and shown in . Fig. 2 represents a section on line f Fig. 1, the device being shown in perative condition in Figs. 1 and 2, rcuit being broken. Fig. 3 represents side elevation showing the device in its perative condition, the circuit being closed. g. 4 represents a view similar to a portion Fig. 3 showing the circuit broken by the tomatic action of the time switch. Fig. 5 presents a section on line 5—5 of Fig. 2. g. 6 represents a perspective view of the ing containing the resistance coils. Fig. 7 represents a diagram showing the preferred arrangement of the wire of which the resistance is composed.

Similar reference characters indicate the same or similar parts in all of the figures.

In the drawings, 12 represents a suitable casing or holder which is here shown as provided with a base 13 adapted to rest upon a horizontal support, although it is obvious that the casing and the parts hereinafter described, supported thereby, may be of any suitable form and construction and supported in any suitable way. The casing is provided with an electrical resistance which is preferably composed of a plurality of wire coils 14 connected in series as indicated in Fig. 7, the ends of the wire of which the series of coils are composed being connected with circuit wires 15 and 16. An electric circuit is provided which includes the wires 15 and 16, a battery 17, or other source of electricity, one pole of which is connected with the wire 15, as shown in Fig. 2, and a wire 18 connected with the other pole of the battery and having a terminal 19 which is located in an oscillatory switch carrier 20, hereinafter described. The circuit wire 16 has a terminal 21 which is also located in the carrier 20 in somewhat close proximity to the terminal 19. The arrangement is such that the circuit is normally broken between the terminals 19 and 21 and is adapted to be closed to heat the resistance, by an electrical connection between the said terminals.

The carrier 20 is pivoted at 21′ to the casing 12 and is adapted to be oscillated and successively assume the positions shown in Figs. 2 and 3. The carrier is chambered internally to form an endless circulating conduit in which a circuit-closing and breaking device or switch 22, is movable, said switch being preferably a mass of mercury adapted to flow freely in the guide. The conduit includes a reservoir portion 23 adapted to contain the mercury switch when the circuit is broken, as shown in Fig. 2, a portion 23^a, which receives the terminals 19 and 21, the mercury being adapted to flow into the portion 23^a when the carrier is turned to the position shown in Fig. 3, and thus connect the terminals to close the circuit, and a return portion 23^b, which is con-

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nected with the portion 23^a by a contracted passage 23^c. When the carrier 20 is moved to the position shown in Fig. 3, the mercury 22 accumulates in the conduit portion 23^a and closes the circuit. If the carrier 20 is held in the position last described the circuit remains closed until enough of the mercury flows through the contracted passage 23^c to separate it from the terminal 19, as indicated in Fig. 4. The passage 23^c is of such a size that the mercury flows freely through it, so that the circuit remains closed long enough to properly heat the resistance and enable a cigar to be lighted, the duration of the closing of the circuit depending on the size of the passage 23^c. Said passage is preferably formed in a metal plate or partition 24 extending across the conduit. After the circuit is broken, the resistance immediately commences to cool so that the device cannot be again used for igniting purposes until the circuit has been again closed. In order to again close the circuit it is necessary to first restore the carrier 20 to the position shown in Fig. 1. This operation causes the mercury switch to flow through the return portion 23^b of the conduit, and through a tubular extension 23^d which projects well into the reservoir portion 23, and is arranged, not only to deliver the mercury into said reservoir portion, but also to prevent any of the mercury from flowing directly from the reservoir portion into the return portion 23^b, the extension 23^d acting as a stand-pipe, the end of which is elevated above the mass of mercury by the movement of the carrier 20 from the position shown in Fig. 2 to that shown in Fig. 3.

Means are provided for moving the carrier 20 from one position to another, said means preferably including a lever 25 pivoted at 26 to the casing and connected by a link 27 with the carrier 20, the depression of said lever moving the carrier from the position shown in Fig. 2 to that shown in Fig. 3, and a spring 28 connecting the lever with the casing 12 and adapted to automatically restore the removable parts to the position shown in Fig. 2.

It will now be seen that when the lever 25 is depressed, the mercury switch is moved to a position to connect the terminals 19 and 21 and thus close the circuit, and is held in its circuit-closing position for the predetermined period required to permit enough of the mercury to flow by gravitation through the passage 23^c to uncover the terminal 19, the circuit being automatically broken after a predetermined period of heating, and further heating being impossible until time enough has elapsed to permit a partial cooling of the resistance.

The resistance coils 14 are preferably contained in a refractory insulating case 29 constructed as shown in Fig. 6, said case being preferably composed of plates of [illegible]rating said arranged to form compartments 30 in w[illegible] switch in the coils 14 are located. [illegible]vitation for

31 represents a perforated screen or g[illegible]uit after a which bears upon the outer side of th[illegible] injurious sistance and prevents contact of a cigar [illegible]vented. the coils, said guard being exposed thro[illegible] In an elec an opening 32 formed in the casing 12. [illegible]on with an screen or guard 31 is preferably comp[illegible]tance of a of a sheet of refractory insulating mat[illegible] operative such as mica adapted to bear on the [illegible]utomatical without establishing a short circuit bet[illegible]determine them, and provided with perforations w[illegible]tion of said permit the heat from the coils to lig[illegible] In an elec cigar. If desired, the mica guard 31 ma[illegible] protected by a layer 31^a (Fig. 5) of [illegible] gauze or perforated metal, the opening[illegible] which register with the openings in the [illegible] guard.

The resistance is preferably arrange[illegible] an inclined position relatively to the ca[illegible] as shown in Figs. 1 and 2, the portion o[illegible] casing at the upper and lower edges o[illegible] resistance being preferably provided [illegible] air passages 33 to permit circulation o[illegible] through the resistance.

The carrier 20 is preferably a bloc[illegible] wood or other suitable material cut awa[illegible] one side to form the major surfaces o[illegible] conduit, the carrier being preferably [illegible] pleted by a transparent plate 34 (Fig[illegible] attached to the body of the carrier [illegible] forming the outer side of the conduit. [illegible] transparent plate enabling the conditio[illegible] the mercury switch to be readily observ[illegible]

35 and 36 represent stops adapted to [illegible] the movements of the carrier 20.

I do not limit myself to the details of [illegible] struction shown and described and may [illegible] riously modify the same without depar[illegible] from the spirit of invention.

It will be seen that the terminal-cont[illegible] ing portion of the conduit is formed to [illegible] mit a quick entrance of the mass of merc[illegible] in to said portion when the carrier is tur[illegible] to position shown in Fig. 3 and a slow [illegible] cape of the mercury from said portion. [illegible] will also be seen that the conduit is pr[illegible] cally endless and is formed to cause a [illegible] gressive circulating movement of the [illegible] cury by gravitation when the carrier [illegible] moved as described.

I claim:

1. In an electric cigar lighter, the co[illegible] nation with an electric circuit including [illegible] resistance element, of a switch for controlling said circuit and provided with means made operative by the closing of the circuit for automatically breaking the circuit after a predetermined period, whereby injurious heating of the resistance is prevented.

2. In an electric cigar lighter, the combination with an electric circuit including a resistance element, of a switch for controlling said circuit, and means for manually

rating said switch to close the circuit, l switch including means controlled by vitation for automatically breaking the uit after a predetermined period, where- injurious heating of the resistance is vented.

In an electric cigar lighter, the combi- on with an electric circuit including a tance of a time switch in said circuit e operative by the closing of the circuit utomatically breaking the circuit after edetermined period irrespective of the tion of said resistance.

In an electric cigar lighter, the combination with an electric circuit including a resistance element, of a switch for controlling said circuit, and means for manually operating said switch to close the circuit, said switch being provided with means for automatically breaking the circuit after a predetermined period irrespective of the position of said manual operating means.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN W. BURNETT.

Witnesses:
C. F. BROWN,
P. W. PEZZETTI.

PAGES 324 + 325

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W. S. HADAWAY, Jr.

ELECTRIC HEATING APPARATUS.

APPLICATION FILED MAY 1, 1909.

1,046,777.

Patented Dec. 10, 1912.

3 SHEETS—SHEET 1.

Fig. 1.

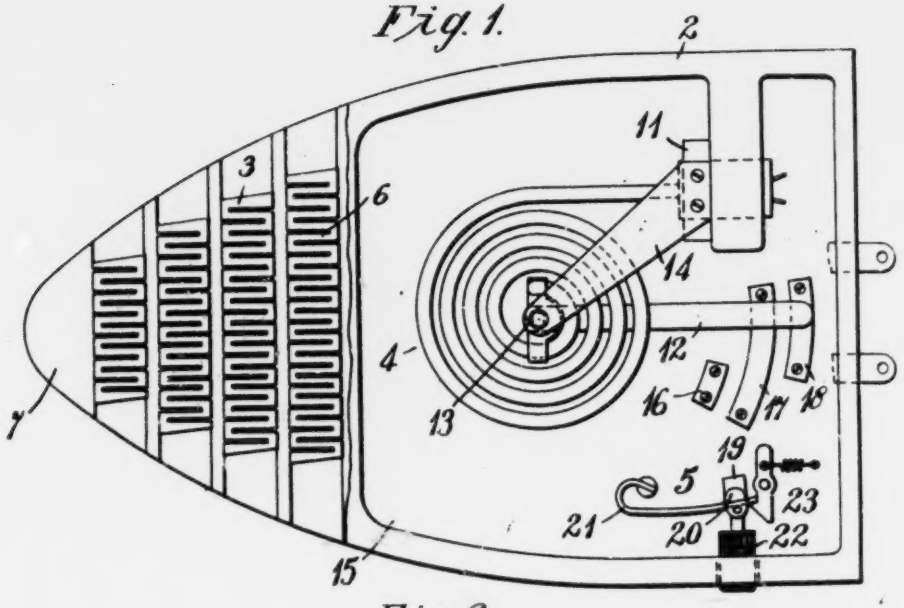
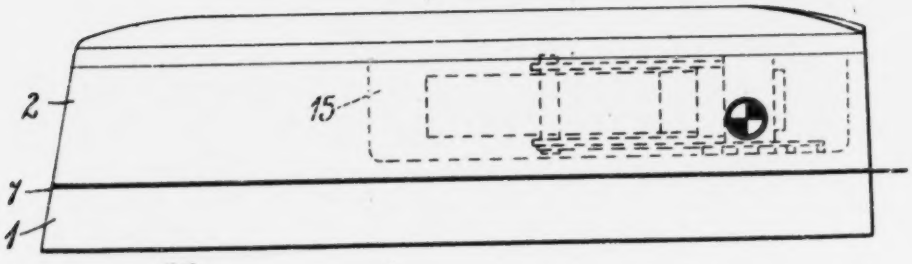


Fig. 2.



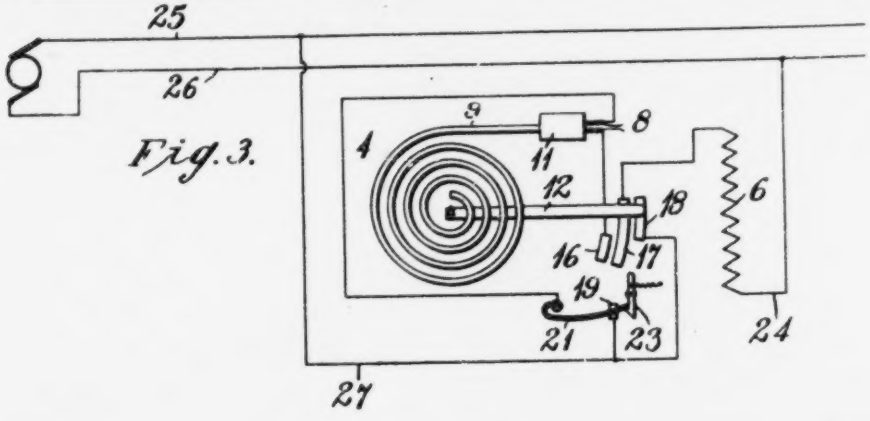


Fig. 3.

WITNESSES:

Fred H. Miller

R. F. Dearborn

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328

W. S. HADAWAY, Jr.

ELECTRIC HEATING APPARATUS.

APPLICATION FILED MAY 1, 1909.

1,046,777.

Patented Dec. 10, 1912

3 SHEETS—SHEET 2.

Fig. 6.

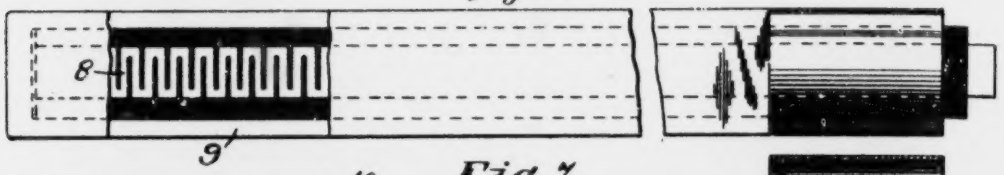


Fig. 7.

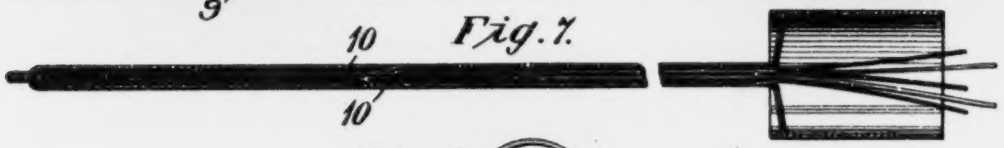


Fig. 8.

Fig. 4.

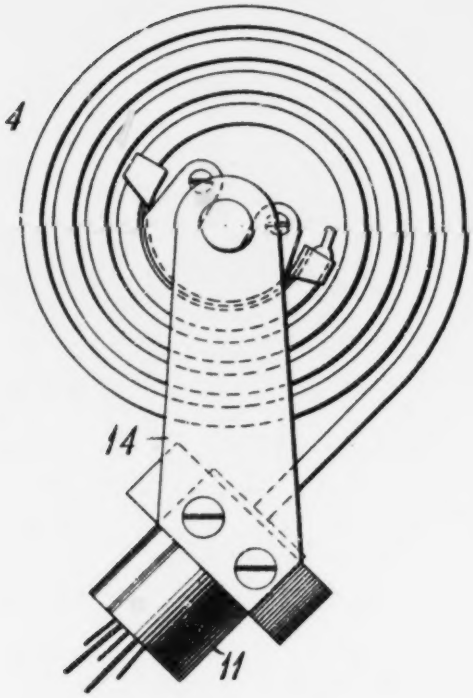
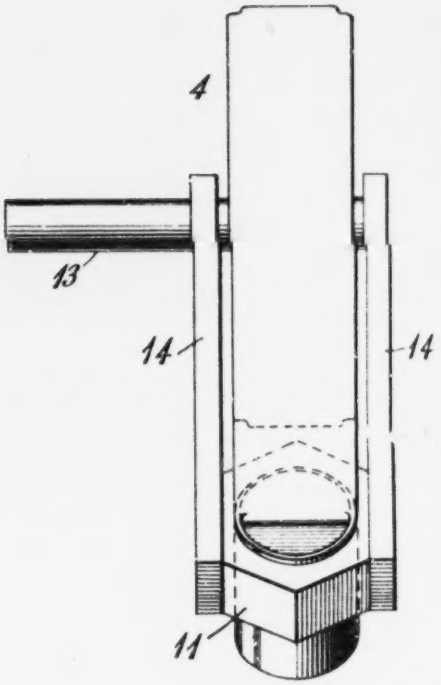


Fig. 5.



WITNESSES:

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ELECTRIC HEATING APPARATUS.

APPLICATION FILED MAY 1, 1909.

330

1,046,777.

Patented Dec. 10, 1912.

3 SHEETS—SHEET 3.

Fig. 9.

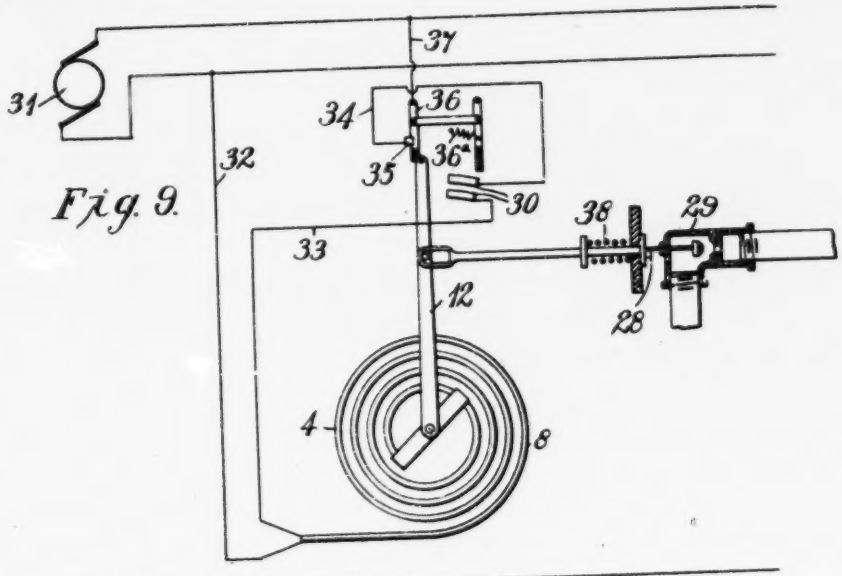
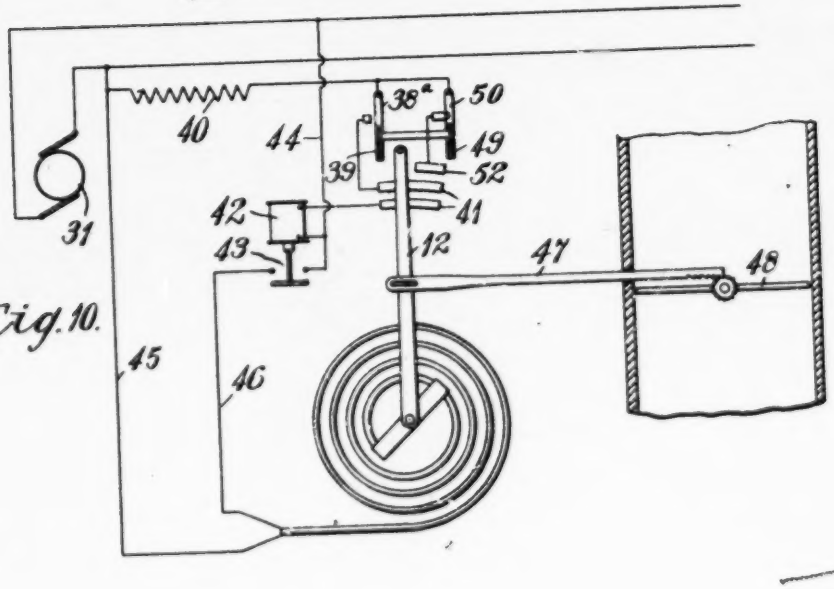


Fig. 10.



WITNESSES:

Fred H. Miller

R. F. Dearborn

INVENTOR

William S. Hadaway

BY

Hadley & Edmonds

ATTORNEYS

UNITED STATES PATENT OFFICE.

WILLIAM S. HADAWAY, JR., OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRIC HEATING APPARATUS.

046,777. Specification of Letters Patent. Patented Dec. 10, 1912.

Application filed May 1, 1909. Serial No. 493,409.

all whom it may concern:

Be it known that I, WILLIAM S. HADAAY, Jr., a citizen of the United States, d a resident of East Orange, in the county Essex and State of New Jersey, have inted a new and useful Improvement in ctric Heating Apparatus, of which the lowing is a specification.

My invention relates to electric heating aratus and particularly to electrically ted sad irons and other devices of genl utility.

One object of my invention is to provide eans which shall be dependent upon a determined temperature for automatily producing a positive dynamic action a second object is to apply the means referred to to an electrically heated sad or similar device for interrupting the uit of the heating element when a prermined temperature is exceeded in the ice.

n my copending application, Serial No. 404, filed of even date herewith, I have trated and described a combined ther-tat and electric heater comprising a ing element suitably inclosed in and ited from a sheath composed of unlike ls welded or otherwise secured together eir edges. The structure of this ther-tat is such that a movement of an arm ndicator may be effected by variations emperature in the surrounding medium n the heating element is electrically disected.

ccording to my present invention, I have zed this relatively slight movement for tablishing an electric circuit through the eating element, of which the thermostat is composed, thereby effecting a positive dynamic action of the arm, which is operatively connected to the thermostat. The mechanical movement produced by this means may be utilized for various purposes, as hereinafter more fully pointed out.

Figure 1 of the accompanying drawings is a plan view, with certain of the parts broken away, of an electrically heated sad iron embodying my invention. Fig. 2 is a side elevation of the structure shown in Fig. 1, and Fig. 3 is a diagrammatic view showing the circuit connections for the heating element and the thermostat which are embodied in the structure of the sad iron. Figs. 4 and 5 are views at right angles to each other, and Figs 6, 7 and 8 are detail views, on a larger scale, of the combined electric heater and thermostat shown in the other figures. Figs. 9 and 10 are diagrammatic views which are illustrative of other applications of my invention.

Referring to Figs. 1 to 8, inclusive, the electrically heated sad iron here shown comprises a base plate 1, a body member 2, a resistance or heating element 3 interposed between the two, a combined electric heater and thermostat 4 and a circuit interrupter 5. The resistance or heating element 3 may be of any suitable form, being preferably constructed in accordance with my copending application, Serial No. 445,199, comprising a slotted resistance ribbon 6 assembled between insulating plates or sheets 7 which are adapted to be fused together upon the application of heat in such a way that the ribbon is practically embedded in homogeneous insulation.

The combined electric heater and thermostat, hereinafter referred to as the thermostat 4, comprises a resistance element 8 which is inclosed by and insulated from a metal sheath 9 composed of strips 10 of unlike metals welded together at their edges. The rod or bar thus formed is bent into the form of a spiral (see Figs. 1 and 4 of the drawings) and is rigidly supported at its outer end by means of a relatively stationary bracket 11. A contact arm 12 is secured to a shaft 13 which is rotatably supported by projections 14 on the bracket 11, with its axis substantially coincident with that of the spiral. The arm 12 is so connected to the inner end of the spiral that the movement of the thermostat, caused by variations in temperature, effects a rotative movement of the said arm in the one direction or the other. The thermostat 4 is mounted within a chamber or recess 15 in the body member 2 of the sad iron, and the outer end of the arm 12 is adapted to engage

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a plurality of stationary contact ring segments 16, 17 and 18, as hereinafter described.

The switch 5 comprises a stationary contact member 19, a movable contact member 20 secured to the outer end of a resilient arm or spring 21, which coöperates therewith, a push button 22 for closing the switch and a latch 23 for holding the switch closed, in opposition to the action of the spring 21.

The operation of the device will be readily understood from the diagram of Fig. 3, to which reference may now be had. The heating element 6 of the device is interposed in circuit between one terminal 24, which may be connected to one side of any suitable supply circuit 25—26, and the contact ring segment 17. The contact ring segment 18 and the contact member 19 are both connected to the opposite terminal 27 of the device. The resistance element 8 of the thermostat is interposed in circuit between the ring segment 16 and the contact member 21. The arrangement of parts is such that, under normal conditions, the contact arm 12 engages the contact ring segments 17 and 18, so that a circuit is established from the line conductor 26 through the terminal 24, resistance 6, contact segments 17 and 18, and the terminal 27 to the opposite line conductor 25.

If the supply circuit of the electric sad iron is not interrupted, when the device is not in use, the heat to which the thermostat is subjected will, of course, gradually increase and a relatively wide movement of the contact arm 12 will result. This movement serves to bring the contact arm 12 into engagement with the segment 16, thereby completing a branch circuit from the segment 17 through contact member 16, resistance element 8 of the thermostat, switch 5 and terminal 27 to the line conductor 25. Electric energy is thus supplied to the resistance element of the thermostat and, consequently, a positive movement of the arm 12 results. This movement is relied upon to release the latch 23, the end of the arm 12 coming into engagement with one end of the latch, and to open the circuits established through the resistance element 6 of the heater and the resistance element 8 of the thermostat. In order to close this circuit, it is necessary to press the push button 22 to permit the latch 23 to again catch the extremity of the spring contact member 21.

If the thermostat is adapted to be automatically connected in series relation to the resistance element of the heater, instead of being connected directly across the circuit, when the heat in the device exceeds a predetermined amount, the action of the thermostat in cutting out the device will be somewhat delayed because of the resulting reduction in the current traversing b the resistance elements. Under these c ditions, the thermostat constitutes a stor reservoir and serves to supply heat to working surface of the iron, if it is bro into service before the heat has risen a ciently, during a temporary period of i ness, to open the switch 5. In this way, heat of the thermostat is added to tha the heater during short inactive period

Reference may now be had to Figs. 9 10 of the drawings, in which like parts designated by the same reference charac In Fig. 9, the arm 12 of the thermost connected by a lost-motion connection to stem 28 of a valve 29.

The operation of the system is as follo If it is assumed that the thermostat is cated in a room to be heated by mean steam or hot water, which is admitte suitable radiators through the valve 29, the parts are in the positions indicate the drawing; as soon as the temperatur the room rises above a predetermined gree, the arm 12 will gradually take up lost motion in its connection to the v stem and will move into engagement stationary contact members 30. When members 30 are bridged, an electric cir is established from any suitable source, as generator 31, through conductor 32, resistance element of coil 8, conductor contact members 30, arm 12, conductor contact member 35, a switch blade 36 conductor 37 to the opposite termina the generator 31.

The current which flows through the sistance element of the coil 8 will raise temperature of such element sufficiently move the arm 12 such further distance to close the valve 29 and separate the sw blade 36 from the contact terminal 35 thus interrupt the flow of current thr the thermostat. As soon as the circu interrupted, the thermostat will gra return to the position which it normally cupies, by reason of the temperature o room, and the valve will be gradually op by a spring 38. The switch blade 36 be returned to the position shown in diagram, by a spring 36ª, as soon as the sition of the arm 12 will permit. The va will not be closed again until the process repeated by the outer end of the conta arm 12 coming into engagement with t contact members 30.

In the arrangement shown in Fig. 10, thermostat is adapted to close a switch when the temperature falls below a pre termined amount, by the engagement of outer end of the arm 12 with a project 39 with which the switch blade is provid When the switch 38ª is closed, a circuit established from the generator 31 throug

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resistance 40, switch 38ª, contact members 41 (which are bridged by a contact arm 12), the magnet winding 42 of a relay switch 43 and a conductor 44 to the opposite terminal of the generator. The relay switch 43 is closed, when its magnet is energized, and a circuit is completed from the generator through conductor 45, the resistance element of the thermostat, conductor 46, switch 43, and conductor 44 to the opposite terminal of the generator. The heat generated in the thermostat causes the arm 12 to rotate in a clockwise direction and to open a damper 48 by causing a positive movement of an actuating rod 47 to which the arm 12 is operatively connected by a lost-motion connection. The arrangement of parts is such that the movement of the arm 12 produces a 90° rotative movement of the damper 48 so that it comes to rest in its open position. Assuming that the damper 48 is located in a hot air furnace pipe, it will be understood that the temperature of the room will be raised when the damper is open. When the positive rotative movement of the arm 12 occurs, its free end engages a projection 49 with which a switch blade 50 is provided and moves the said blade and the blade 38ª, to which it is connected, to break the circuit which was previously completed through the relay winding 42 and thus interrupt the supply of energy to the resistance element of the thermostat. As the thermostat is cooled to the temperature of the room, the arm 12 will gradually return to its mid-position, and, since more heat is continually being supplied to the room through the furnace pipe, the temperature will ultimately be sufficiently increased to cause the thermostat arm 12 to engage a contact member 52. A circuit will then be completed through the switch 50 and the winding 42 of the relay switch 43, and energy will be supplied to the thermostat as indicated above, and another 90° rotative movement of the damper to its closed position will be effected. As the room is successively heated above and cooled below predetermined limits, which may be relatively close together, the damper will be successively opened and closed. In very cold weather, the damper would obviously be open the greater part of the time, and, in warm weather, the damper would be closed most of the time.

My invention may be utilized in many relations which I have not specifically set forth, and, in the case of melting pots for type machines and the like, in which it is desirable to maintain an approximately constant temperature, a primary heater element may be continually maintained in device and my invention may be applied to small auxiliary heater, substantially as hereinbefore set forth.

It is evident that my invention is applicable to various heating devices for the purpose of securing automatic regulation, and I desire that only such limitations in its scope shall be imposed as are indicated in the appended claims.

I claim as my invention:

1. The combination with a thermostat having a resistance heating element embodied therein, of means dependent upon a predetermined movement of the thermostat for automatically supplying electric energy to said element.

2. The combination with a thermostatic member having a normally inactive heat-generating element embodied therein, of means for rendering said heat-generating element active to produce a positive dynamic action by said member when a predetermined and relatively slight movement thereof is effected by externally applied heat.

3. The combination with a thermostat having a resistance heating element embodied therein, of means dependent upon a relatively slight movement of the thermostat for automatically supplying electric energy to said heating element.

4. The combination with a thermostatic member having a limited degree of movement under the action of external heat, of means controlled by said member for producing a further movement thereof.

5. In an electric heating device, the combination with a main heating element, of a thermostat having a heating element embodied therein and actuated by a predetermined temperature to interrupt the circuit of the main heating element and close the circuit of its internal heating element.

6. In an electrically heated device, the combination with a resistance element, of a thermostat having a heater element embodied therein, a switch in the circuit of the resistance element, and means dependent upon a predetermined temperature in the device for automatically supplying energy to the heater element of the thermostat to open said switch.

7. In an electrically heated device, the combination with a resistance element, of a thermostat having a resistance element embodied therein, and means dependent upon a predetermined temperature in the device for automatically supplying energy to the resistance element of the thermostat and interrupting the circuit of both resistance elements by reason of the resulting dynamic action of the thermostat.

8. In a sad iron, the combination with an electric heater, of a thermostat having a resistance element embodied therein and movable under the action of a predetermined temperature in the iron to connect its resist-

ance element to a source of energy, said thermostat being movable further by the action of the heat generated in its resistance element to interrupt the supply of energy to both the heater and said resistance element.

In testimony whereof, I have hereunto subscribed my name this 20th day of April, 1909.

WILLIAM S. HADAWAY, JR.

Witnesses:
R. J. DEARBORN,
B. B. HINES.

E. J. OVINGTON.

ELECTRIC HEATING DEVICE.

APPLICATION FILED JUNE 4, 1912.

336

1,141,576.

Patented June 1, 1915.

Fig. 1.

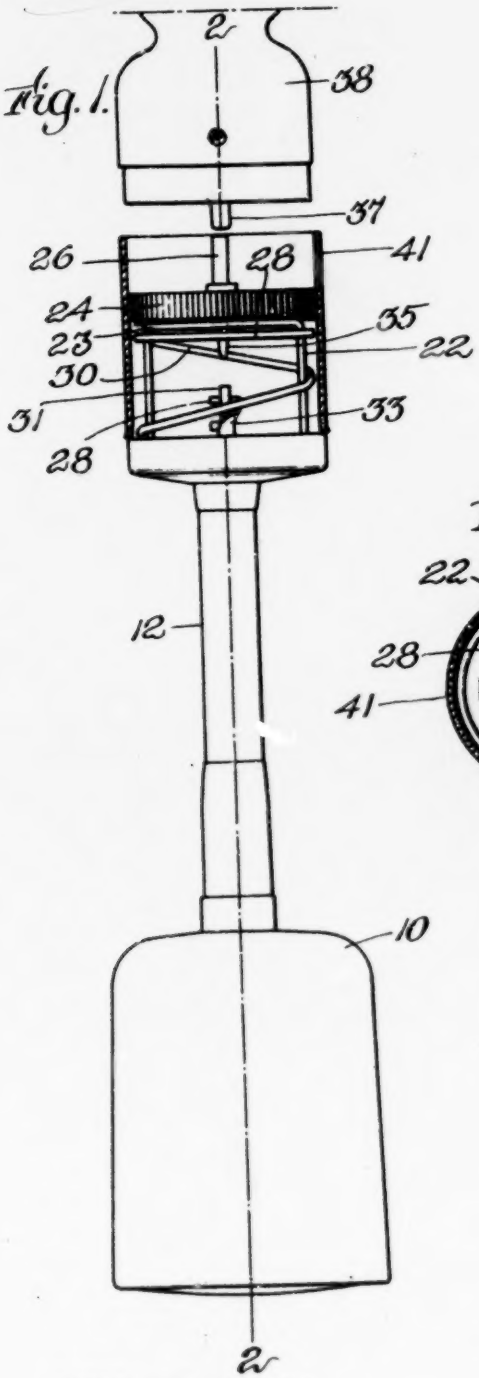


Fig. 2.

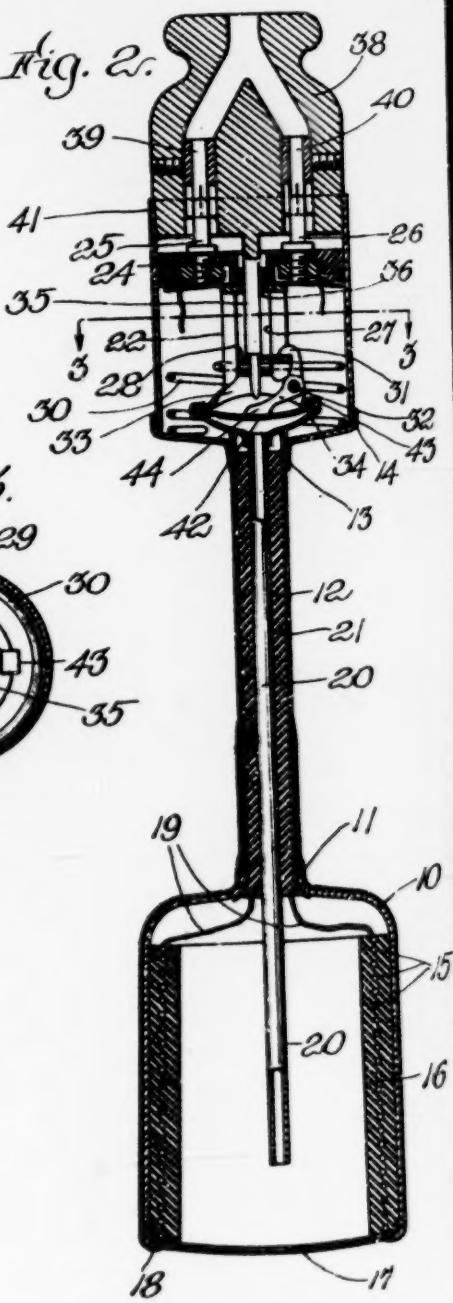
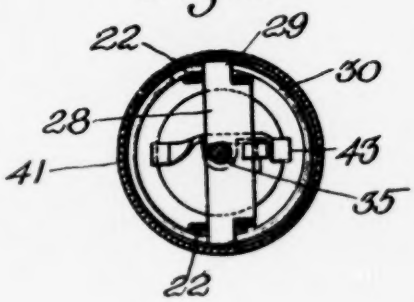


Fig. 3.



Witnesses:

C. L. Rogers

H. C. Bowser

Inventor:

Edward J. Ovington

by Geo. S. Maxwell

Attorney

UNITED STATES PATENT OFFICE.

EDWARD J. OVINGTON, OF BROOKLINE, MASSACHUSETTS, ASSIGNOR TO SIMPLEX ELECTRIC HEATING COMPANY, OF CAMBRIDGE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ELECTRIC HEATING DEVICE.

1,141,576. Specification of Letters Patent. Patented June 1, 1915.

Application filed June 4, 1913. Serial No. 701,533.

To all whom it may concern:

Be it known that I, EDWARD J. OVINGTON, a citizen of the United States, and resident of Brookline, county of Norfolk, State of Massachusetts, have invented an Improvement in Electric Heating Devices, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My present invention relates to electric heating devices, and particularly to automatic cut outs therefor, adapted to disconnect the current supply when the apparatus reaches a predetermined temperature or pressure.

While having other and more general fields of usefulness, the invention is well adapted for use as a feature of immersion heaters, or heating devices adapted to be inserted in a body of water, or other enveloping substance, to heat the same.

A prime feature of my invention consists in an improved arrangement of a projecting means in connection with a trigger adapted to forcibly disconnect the circuit connections upon the arrival of predetermined conditions, the trigger being arranged to normally hold such projecting means inactive.

A further feature of the invention consists in an improved construction of toggle device shown as in the form of a diaphragm, adapted to be controlled by thermal conditions and to act upon the trigger controller of the circuit disconnecting means.

A still further feature of the invention relates to an improved construction, wherein expansion of a gas, liquid or solid, caused by abnormal thermal conditions in the device, is adapted to bring about operation of the circuit disconnecting means.

A further feature of the invention relates to the use of water of crystallization to produce steam which acts to release the mechanism. Water of crystallization is not liberated into steam until a temperature is reached more or less above the boiling point of free water.

The above, and other features of the invention will be better understood from the following detailed description, taken in connection with the accompanying drawings, and will be thereafter pointed out in the appended claims.

Referring to the drawings, Figure 1 is a side elevation of my improved device, partly in section, with the parts shown in circuit disconnecting position; Fig. 2 is a central vertical section on line 2—2 of Fig. 1, showing the parts in circuit closed position; and Fig. 3 is a transverse section on line 3—3 of Fig. 2.

A heat radiating element is shown at 10 as an inverted cup or bell shaped member of metal plate stock, having a neck 11 at its top into which extends a tube 12 at the top of which is fitted a reduced neck 13 at the bottom of a shallow cup shaped member 14. The member 10 has fitted therein any suitable form of electric resistance device to transform electric current energy into heat. Such heating means is shown as a usual resistance wire or band 15 embedded in enamel or the like, 16. The member 10 is, however, well adapted to receive a heating resistance element of the types shown in my prior applications Serial Nos. 557,818, filed April 16, 1911, and 665,411 filed December 12, 1911. The bottom of the member 10 may be closed by a plate 17 over which the end of the member 10 may be spun as seen at 18, and a suitable coating or finish applied over the exterior of these members covering the same smoothly, tightly and firmly. Current energy is supplied to the resistance wire or ribbon 15 by conductors 19, which extend up through the tube 12. A small tube 20 also extends from the lower portion of the member 10 up through this tube 12 to a point within the shallow cup 14 as shown, and the annular space between the small tube 20 and the tube 12 is preferably packed in with any suitable insulating material 21. The shallow cup 14 has fixed thereto a U-shaped bracket or strap support 22 having side portions extending upward and united by a top portion 23, which carries an insulating disk block 24, which has fitted therein the terminal plugs or pins 25, 26, to which the respective conductors 19 lead, as shown. The support 22 is divided as shown to provide between its two sides guide slots 27 within which the ends of a cross bar 28 fit, the ends of this bar projecting some little distance beyond the guide support, as seen at 29 where they are engaged by a stout coil spring 30 which is seated at the bottom

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of cup 14 and normally presses upward with considerable force against the bar 28. This bar is, however, normally held at its lower limit of movement with said spring strongly compressed by a trigger or latch dog 31, pivoted at 32 to a supporting bracket 33 carried by and secured to the flanged and enlarged upper end 34 of the tube 12, as illustrated in Fig. 2. The bracket 33 also is provided with a guiding hole for the reduced lower end of an ejector pin 35, which is guided at its upper end in a guiding aperture 36 in the top portion 23 of support 22 and is acted upon by the bar 28 when the spring 30 is released to forcibly move upward and engage a projection 37 on the lower end of a contact plug 38, to forcibly press the same outward and disconnect the socket contacts 39, 40 thereof from the contact pins 25, 26. The contact plug 38 is shown as fitted in a sleeve cover 41 which fits downward over the block 24 and against the cup 14 to inclose and protect the operative parts.

As a means for operating the trigger 31 to cause the same to be tripped and release the contact plug ejecting spring 30, I provide, as shown, a diaphragm 42, preferably of thin flexible metal, normally dished downward and held at its edges by spun over portions 43 at the periphery of the enlarged upper end 34 of tube 12. The trigger 31 has a downwardly extending arm 44 normally resting upon or adjacent to the top of this diaphragm when the trigger is in locking position, and adapted to be engaged by the diaphragm to trip the trigger from its locking position over the bar 28 upon the occurrence of abnormal thermal conditions, such as to cause the diaphragm 42 to be flexed upward. It is to be understood that this member, shown as a diaphragm 42, is really in the nature of a toggle device, and while specifically shown as a diaphragm is intended to typify any suitable device having a similar mechanical operation. I provide means whereby the diaphragm 42 is acted upon from beneath, upon the occurrence of an abnormal thermal condition to flex the same upward, *i. e.*, so that its "dish" is upward instead of downward. This result may be effected by the generation of a steam pressure in the interior of the member 10, which, passing up through the tube 20, will act on the lower side of the diaphragm 42. It is also within the scope of my invention that the tube 20 may typify a metallic element adapted to itself expand, differentially enough to press the diaphragm past its neutral position by acting directly or indirectly thereagainst, but such a construction is not my preferred form and is not, therefore, herein illustrated.

It is to be understood that in practice the radiating member 10, along with part of the tube 12, is immersed in a body of water or the like, which by conducting the heat away as fast as it is generated, keeps the temperature of the member 10 relatively low, or not far above the boiling point of the liquid. However, when the device is removed from the water or other surrounding body and laid aside, if the user neglects to disconnect the connector plug 38, the device will heat up very rapidly, since the heat transference into the air is relatively slow, and the device would become abnormally and dangerously hot to an extent apt to injure it or set fire to adjacent bodies, were it not for the automatic cut out device which my invention provides. As soon as the temperature rises materially above a predetermined desired maximum, the trigger 31 will be operated to release the compressed spring 30, so that the ejector pin 35 will forcibly project the connector plug 38 outward and clear the terminal conductor pins 25, 26. In the use of gas pressure passing up through the tube 20 and acting on the lower side of the diaphragm, it is not necessary that any outside water be admitted to the interior of the member 10, since the water of crystallization in the refractory core of insulating material will furnish enough steam, and this has the advantage of not being set free in the operation of the device, up to or slightly above the boiling point of free water.

I am aware that various of the details of construction as described may be modified without departing from the spirit of the invention, and I therefore do not desire to be limited in these or in any other respects, except as set forth in the appended claims.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Apparatus of the kind described, comprising means for transforming electric current energy into heat, circuit connections thereto having a disconnectible portion, mean for positively disconnecting such portion with provision for holding the same normally inactive, and means operable by abnormal pressure conditions in the apparatus for releasing said disconnecting means for action.

2. Apparatus of the kind described, comprising means for transforming current energy into heat, circuit connections thereto having a disconnectible element, means for effecting the disconnection of such element, a trigger for holding said means normally inactive, and means operated by expansion within the apparatus under abnormal thermal conditions for tripping said trigger to release said disconnecting means.

3. Apparatus of the kind described, comprising an electric resistance element, circuit connections thereto having a disconnectible

plug, a spring arranged to act on said plug for disconnecting the same, a trigger for normally holding said spring inactive, and means operated by abnormal pressure conditions in the apparatus for tripping said trigger.

4. Apparatus of the kind described, comprising an electric resistance element, circuit connections thereto having a disconnectible element, a spring for disconnecting said element, means for normally holding said spring inactive, and a diaphragm controller for said means.

5. Apparatus of the kind described, comprising an electric resistance element, circuit connections thereto having a disconnectible portion, motive means for disconnecting said portion having a trigger control normally holding the same inactive, and a toggle device arranged to be operated by expansion within the apparatus for governing said trigger.

6. Apparatus of the kind described, comprising an electric resistance element, circuit connections thereto including a disconnector plug, a spring for disconnecting said plug having a trigger control to normally hold the same inactive, a diaphragm of stiff material and dished form adapted to serve as a toggle arranged to govern said trigger, and means for applying fluid pressure to operate said diaphragm.

7. Apparatus of the kind described, comprising an electric resistance element having circuit connections, including a disconnector plug, a spring adapted to act on said plug for disconnecting the same having a controlling trigger, and a diaphragm in position to operate said trigger, the parts being arranged to provide space for the generation of steam to act on said diaphragm and there being connections to lead the steam thereto.

8. Apparatus of the kind described, comprising an electric resistance element having a housing of inverted cup shape, a tube extending vertically from said housing, a second housing fitted to the top of said tube and having fixed thereto terminal connections for the resistance element, a circuit connector plug removably fitted to said terminal connections, a spring fitted within said second housing adapted to disconnect said plug, a controlling trigger for said spring to hold the same normally inactive, and means for releasing said trigger upon the occurrence of abnormal thermal conditions in the apparatus.

9. Apparatus of the kind described, comprising an electric resistance element having a housing of inverted cup shape, a tube extending vertically from said housing, a second housing fitted to the top of said tube and having fixed thereto terminal connections for the resistance element, a circuit connector plug removably fitted to said terminal connections, a spring fitted within said second housing adapted to disconnect said plug, a controlling trigger for said spring to hold the same normally inactive, a dished diaphragm of stiff material in position to act on said trigger, and connections for conveying fluid pressure generated by abnormal thermal conditions in the apparatus to act on said diaphragm.

10. Apparatus of the kind described, comprising electric heating means, terminals therefor having separable connections, a disconnector arranged to separate said connections, means for holding said disconnector normally inactive, with provision for holding water of crystallization in thermal contact with said heating means, the parts being so arranged as to cause such water of crystallization to create a pressure when the device is run under abnormal conditions, and means operable by the pressure so created for releasing said disconnector.

11. An electric heater having a circuit opening device associated therewith, comprising a toggle joint, and means expansible by heat operating through said toggle joint for operating the circuit opening device.

12. An electric heater having a circuit opening device associated therewith, comprising a diaphragm, and means expansible by heat operating through said diaphragm to release the circuit opening device.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD J. OVINGTON.

Witnesses:
C. L. ROGERS,
R. G. HERSEY.

PAGES 340 + 341

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R. H. MAPLE.

THERMAL ELECTRIC CUT-OUT.

APPLICATION FILED NOV. 20, 1914.

342

1,261,256.

Patented Apr. 2, 1918

Fig. 1.

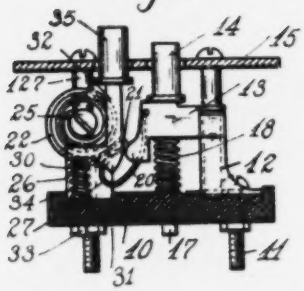

Fig. 2.

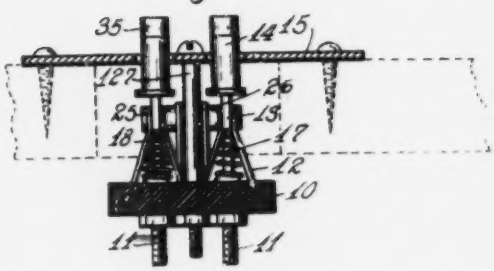

Fig. 3.

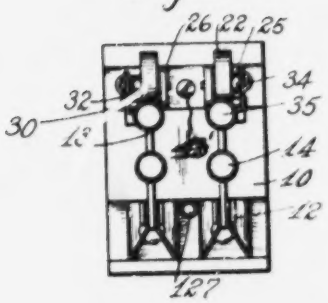

Fig. 4.

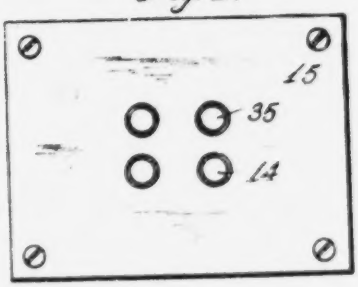

Fig. 5.

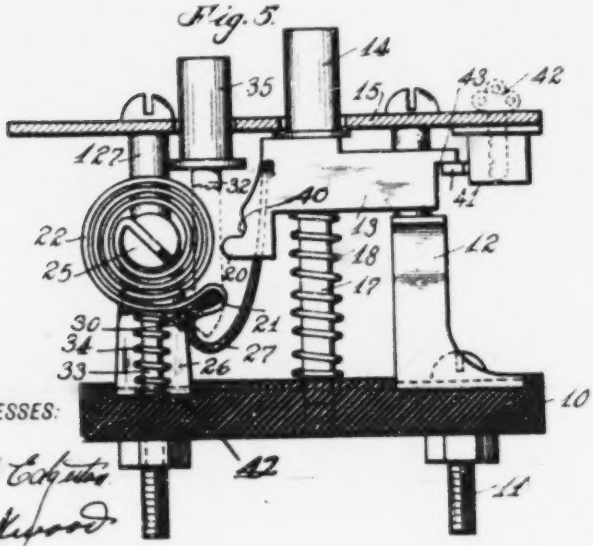

Fig. 6.

WITNESSES:

A H Eckstein

R J Lockwood

INVENTOR

Roy H Maple

BY

V H Lockwood

ATTORNEY

UNITED STATES PATENT OFFICE.

ROY H. MAPLE, OF INDIANAPOLIS, INDIANA.

THERMAL ELECTRIC CUT-OUT.

REISSUED

1,261,256. Specification of Letters Patent. Patented Apr. 2, 1918.

Application filed November 20, 1914. Serial No. 873,216.

To all whom it may concern:

Be it known that I, ROY H. MAPLE, a citizen of the United States, and a resident of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Thermal Electric Cut-Out; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters refer to like parts.

The object of this invention is to provide a thermo-electric circuit breaker or cut out which has a very few number of parts and is designed primarily for use on low voltage circuits, such as those used with battery illumination. This form of circuit breaker has a high momentary overload capacity for short periods of time and in low voltage lamp circuits the extremely low resistance of the filaments causes a heavy flow of current until they become sufficiently heated to cause a circuit breaker, not having the characteristics mentioned, to be set beyond this peak current load. The setting of a circuit breaker for this momentary overload would render it useless for small overloads such as caused by grounds and partial short circuits. The type described in this application will operate successfully if any load above the normal is continued for any length of time.

Another feature of the invention consists in forming such a device so that it will perform the above function and without changing circuits as an ordinary switch. In this last mode of operation of the device, the thermostat does not operate. In other words, the device operates as an ordinary switch when the thermostat is carrying the regular load. The free end of the thermostat coöperates with the movable switch member in making the circuit and another resetting movable member moves the free end of the thermostat out of engagement with the free end of the switch member for breaking the circuit. So this forms an ordinary "make and break" switch and yet the circuit will be automatically broken on the occasion of temperature change influencing the thermostat. The device, therefore, is a combined thermostatic switch and manually operated switch.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Figure 1 is a side elevation of the switch with the parts in circuit closing position and with parts in section. Fig. 2 is an elevation of the right-hand end of Fig. 1 and showing two switches and both switches closed and with parts in section. Fig. 3 is a plan view of the device shown in Fig. 2 with the top plate removed. Fig. 4 is a plan view of Fig. 2 including the top plate. Fig. 5 is a section like Fig. 1 of a modified form. Fig. 6 is a perspective view of the end of the thermal spring.

In the drawings herein shown there is a base plate 10 formed of hard rubber and having in it a binding post 11 which also screws upon the plate 10. There is a spring switch member 12 consisting of a plate formed of spring metal and with the two sides thereof bent upward so as to press against each other normally and with the upper ends spread away from each other somewhat to permit the entrance between them of the movable member 13 of the switch. This makes substantially a knife switch and may be made in any suitable form, as the invention is not limited to any particular construction of the switch members. The movable switch member 13 has secured to it a hard rubber push button 14 that reciprocates through a plate 15. It also has an inwardly extending arm 17 which is angular in cross section and extends through a correspondingly shaped hole in the base plate 10 and reciprocates therein. A spring 18 is located around the arm 17 and lies between the plate 10 and the switch member 13 and its function is to return or force outward said switch member after it has been forced inward and released. The switch member 13 has a nose piece 20 on it with a curved edge or surface, as shown in Fig. 1, adapted when the switch member 13 is pushed inward to pass below the free end 21 of a thermal strip 22. When the switch member 13 is in such inward position, it will be held there in spite of the action of the spring 18, by said end 21 of the thermostat until said

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end of the thermostat is moved so as to release the switch member 13 and then the spring 18 returns it and breaks the circuit.

The thermal strip 22 is coiled about a horizontal arm 25 extending from a vertical stand 26. The horizontal arm is slotted to receive the inner end of the thermal strip and then said strip is coiled about the same and the free end of the strip is bent back on itself to enlarge said end and provide a curved surface and also provide engagement members for trip member 35 on the end thereof for engaging the curved surfaces of the nose 20 of the switch member 13. The end of the thermal strip is located so as to engage the nose of the switch member 13 and as the switch member 13 is pushed inward the end 21 of the thermal strip passes the point of the nose 20 and engages the surface on the upper or outer side of said nose and holds the switch member 13 inward in circuit making position. To insure the circuit passing effectively from the thermal strip to the switch member 13 a pig tail 27 is provided connecting them substantially as shown in Fig. 1, and arranged so as not to interfere with the movements of the two members of said parts.

The plates 10 and 15 are held spaced apart by suitable posts or screws 127. The parts of the mechanism so far described operate as a thermostatic switch. In normal position the circuit is broken. When, however, the switch member 13 is pushed inward, the parts assume the position shown in Fig. 1 and the circuit is closed by the knife edge of the member 13 entering between the spring contacts 12 and the thermal strip will hold the parts 12 and 13 in electrical connection until the thermal strip 22 is heated causing it to expand and to some extent unwind, thus moving the end 21 of said thermal strip away from the nose 20 of the switch member 13. Then the switch member 13 returns to normal position under the action of the spring 18 and out of engagement with the spring contacts 12.

To enable said thermostatic device to be used also as an ordinary manually operated switch there is a lateral projection 30 from the free end of the thermal strip in position to be engaged by a shoulder 31 and push rod 32 mounted in the plates 10 and 15. An extension 33 on said push rod 32 reciprocates in the base plate 10 and the push rod is returned by a spring 34 lying between the shoulder 31 and the plate 10.

Assuming that the circuit has been operated so as to close the circuit by depressing the button 14 on the switch member 13, and it is desired to break the circuit manually, the push button 35 is operated by releasing the free end of the thermal strip so that it ceases to hold the switch member 13 in engagement with the contact springs 1[illegible] The spring 34 immediately returns the pus[illegible] button 35 to its normal position. In orde[illegible] that the free end of the thermal strip ma[illegible] more effectually engage and hold the switc[illegible] member in circuit closing position, th[illegible] switch member is provided with a notch [illegible] above its end and with a substantially reg[illegible] lar curvature into which the bent free en[illegible] of the thermal strip lies. The effect of th[illegible] is that the notch provides a shoulder again[illegible] which the free end of the thermal strip be[illegible] so that when the strip is heated, said eng[illegible] ing end will move away from the swit[illegible] member at a substantially right angle to t[illegible] portion thereof which it had been engagi[illegible]

Locking means is also provided consisti[illegible] of the laterally movable bolt 41 mounted [illegible] the casing adapted to be operated by a [illegible] suitable key 42 so that when the bolt is [illegible] tuated, it will engage a notch 43 in the e[illegible] of the switch member and prevent its ope[illegible] tion or movement.

The arm 26 is held in place and fr[illegible] turning by being made angular so as to h[illegible] a lower plate that sets down in the rec[illegible] 42 in the base 10 and is secured thereto b[illegible] screw 43', as seen in Fig. 3.

The invention claimed is:

1. A thermal switch having a coiled th[illegible] mal strip in the circuit thereof, a mova[illegible] switch closing member in position to be h[illegible] closed by the free end of said thermal st[illegible] a spring for returning said switch mem[illegible] after its release, and means for positiv[illegible] disengaging the free end of the ther[illegible] strip from said switch member.

2. A switch having a coiled thermal s[illegible] in the circuit thereof, a movable switch c[illegible] ing member in position to be closed by [illegible] free end of said thermal strip, a spring [illegible] returning said switch member after it i[illegible] leased, a push rod for disengaging the [illegible] end of the thermal strip from said s[illegible] member and releasing it, and means fo[illegible] turning said push rod.

3. A switch including a coiled the[illegible] strip in the circuit thereof, a lateral pr[illegible] tion near the free end of said strip, a [illegible] able switch member for closing the ci[illegible] and in position to be held closed by the [illegible] end of said thermal strip, a push ro[illegible] engaging the lateral projection from [illegible] thermal strip and moving it so as to r[illegible] the switch member, and means for return[illegible] the switch member and push rod to nor[illegible] position.

4. A switch including a coiled ther[illegible] strip in the circuit thereof, a lateral pro[illegible] tion near the free end of said thermal st[illegible] a movable switch member for closing the [illegible] cuit and in position to be held closed by [illegible] free end of said thermal strip, a push [illegible] for engaging the lateral projection from [illegible] thermal strip and moving it so as to rele[illegible]

switch member, and springs for return- the switch member and push rod to nor- l position.

6. A thermal switch having an arm, a rmal strip secured at one end to said arm d coiled about the same with the free end said strip bent back on itself, and a mov- e switch member having an inwardly med end provided with a curved notch o which said curved free end of the ther- l strip is adapted to enter and hold the itch member closed, the parts being ar- ged so that the releasing movement of free end of the thermal strip will be sub- ntially at a right angle to the portion of switch engaged thereby.

7. A thermal switch having two parallel arated plates in fixed relation to each er, a thermal strip mounted between said tes and with one end thereof secured in d position and the other end thereof e, a contact located between said plates, a itch member slidably and non-rotatably unted in said plates in position to be ved into and out of engagement with the e end of said thermal strip and with said contact, and a spring for returning said switch member after it has been moved into such engagement.

7. A thermal switch having two parallel separated plates in fixed relation with each other, a coiled thermal strip mounted between said plates and with one end thereof secured in fixed position and the other end thereof free, a contact between said plates and in fixed relation therewith and with said thermal strip, a push rod extending through said plates and arranged so as to be non-rotatable, a switch member secured on said push rod so as to be movable thereby into position to engage both the free end of said thermal strip and said contact, and a spring on said push rod for returning the same and the switch to normal outward position.

In witness whereof, I have hereunto affixed my signature in the presence of the witnesses herein named.

ROY H. MAPLE.

Witnesses:
J. H. Wells,
R. G. Lockwood.

PAGES 346 + 347

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J. F. CAVANAGH.

LOCK SWITCH.

APPLICATION FILED MAR. 14, 1918.

348

1,294,045.

Patented Feb. 11, 1919.

Fig.1.

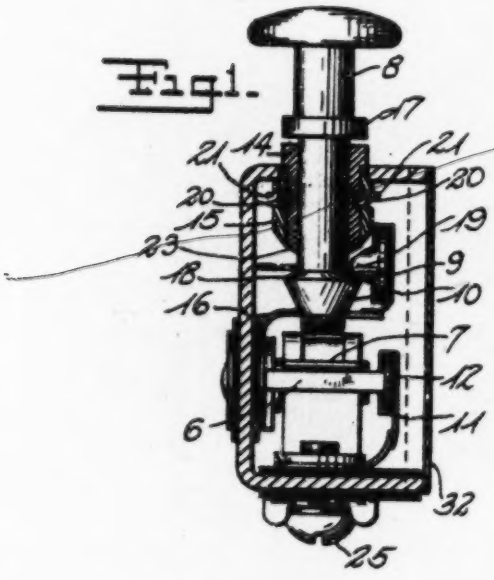


Fig.2

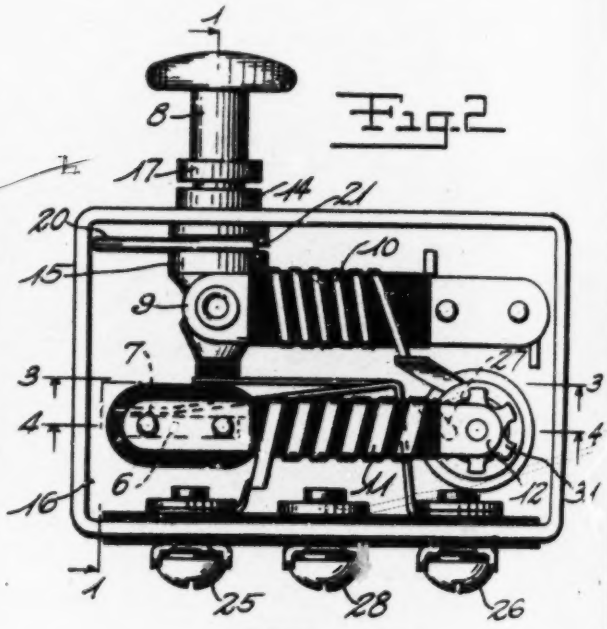


Fig.3.

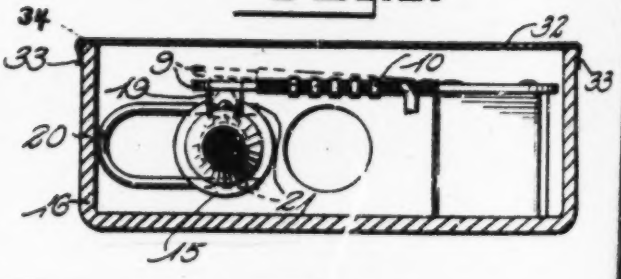


Fig.5.

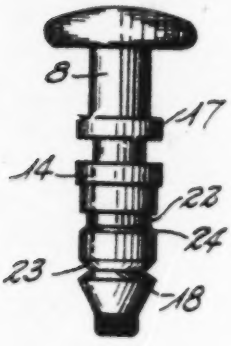
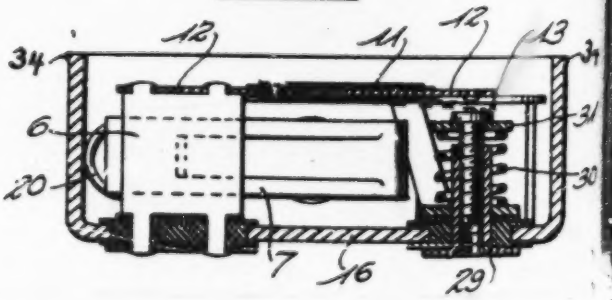


Fig.4.



INVENTOR

John F. Cavanagh

BY

Mitchell & Allyn.

ATTORNEYS

UNITED STATES PATENT OFFICE.

HN F. CAVANAGH, OF MERIDEN, CONNECTICUT, ASSIGNOR TO CONNECTICUT TELEPHONE & ELECTRIC COMPANY, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

LOCK-SWITCH.

,294,045. Specification of Letters Patent. Patented Feb. 11, 1919.

Application filed March 14, 1918. Serial No. 222,313.

o all whom it may concern:

Be it known that I, JOHN F. CAVANAGH, a itizen of the United States of America, reiding at Meriden, Conn., have invented a ew and useful Lock-Switch, of which the llowing is a specification.

My present invention relates to what are enerally known as "lock switches", particuarly for use on motor vehicles, which are esigned to be "locked" or rendered inoprative when the machine is left unattended.

The objects of the invention generally are o provide a switch of this character of simle, inexpensive and entirely practical conruction.

Another object is to combine the locking nd controlling functions all in a single ember so that by means of a single "conroller" the switch may be operated to open r close the circuit or may be locked or renered entirely inoperative.

Briefly stated, the invention resides in the ombination with a suitable supporting base nd circuit contacts mounted thereon, of a unger or operating member having a certin limited movement on the base for conolling the circuit contacts and adapted to entirely removed and separated from the se for the purpose of rendering the switch operative. In connection with said plunr there may be provided a thermostatilly controlled latch for holding the plunr in a predetermined position and the inntion embodies various other features and tails of construction all as will later apar.

In the accompanying drawing I have illusated the invention embodied in a practical mmercial form but would have it underood that changes and modifications may be indulged in without departure from the true spirit and scope of the invention.

In said drawing:—

Figure 1, is a vertical sectional view of a switch constructed in accordance with and embodying the invention, said view being taken substantially on the plane of the line 1—1 of Fig. 2.

Fig. 2, is a view of the switch mechanism with the side wall of the switch casing removed.

Figs. 3 and 4 are sectional views taken substantially on the planes of the lines 3—3 and 4—4 respectively of Fig. 2.

Fig. 5, is a detail view of the detachable operating key or plunger.

The switch illustrated is a so-called automatic ignition switch of the character disclosed in my Patent #1,232,458 consisting generally of a relatively stationary contact 6 and a spring contact 7, the latter being forced into engagement with the former by means of an operating key or plunger 8 which plunger is normally retained in the circuit-closed position by means of a thermostatic bar 9 which, when the circuit is left in closed condition, is warped through the action of a heating coil 10 engaged thereabout to release the plunger and thus permit the spring contact to separate from the stationary contact. This heating coil may be cut into circuit automatically by means of a primary heating coil 11 connected in the ignition circuit and coiled about the thermostatic bar 12 which, as it becomes heated due to the continued closed condition of the ignition circuit, makes engagement with a contact 13 forming a terminal for the heating coil 10.

The combined lock or key and switch operating plunger has a limited movement for the purpose of controlling the switch contacts and is removably supported so that it may be entirely disconnected and detached from the switch structure. In the present disclosure this is accomplished by slidably supporting the plunger within a bushing 14 and by detachably securing this bushing within a socket or tubular guide 15, the latter forming a part of, or being secured to the casing 16, which in this instance forms a base for the switch parts. The limited circuit-controlling movements of the plunger are provided for by the shoulders 17 and 18 on the plunger which limit the movements of said plunger within the tubular bushing 14. The lower shoulder 18 in the present disclosure is beveled to coöperate with a beveled lug 19 on the end of the themostatic bar 9. The double bevel or inclination of this shoulder 18, as illustrated, enables the plunger being shifted either inward or outward against the tension of the thermostatic latching bar 9 and at the same time enables said

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latching bar to yieldingly hold the plunger in either of the positions to which it may be shifted.

The supporting bushing 14 is removably secured in place in the present disclosure by a hairpin spring 20 engaged about the tubular guide 15 and with the spring arms thereof extending in through slots 21 in the sides of said tubular guide into position to engage in an annular locking groove 22 formed in the supporting bushing. The lower end of the supporting bushing is preferably beveled as indicated at 23 to spread the spring arms apart as the key is being inserted in the switch and the lower shoulder or edge of the groove 22 in the bushing may be beveled somewhat as indicated at 24 to facilitate the removal of the plunger.

When the plunger is engaged in its seat in the switch as in Fig. 1, it may be shifted either out or in to open or close the circuit at will. If left in the circuit-closed position and the circuit is closed at other points, the latching thermostat will operate to automatically release the plunger and thus permit separation of the circuit contacts. If it is desired to lock the switch inoperative, it is merely necessary to pull the switch plunger and its supporting bushing out of its socket, leaving the switch contacts separated, with no means for bringing them into closed relation. The key plunger, with its associated bushing, is relatively light and small and so can easily be carried about. When it is desired to close the circuit again, the plunger is simply forced to its seat in the socket provided therefor and when thus engaged in its socket may be shifted to either the open or the closed circuit position. In inserting the plunger the upper shoulder 17 on said plunger acts as an abutment for forcing the bushing down into the tubular guide or socket, and in removing the plunger the lower shoulder 18, serves as an abutment engaging the lower end of the bushing to carry the bushing along with the plunger.

The various parts of the switch may be suitably mounted within the supporting base 16 and the necessary circuit terminals will be provided therefor. In the illustration there is provided one terminal 25 for the primary heating coil 11, and another terminal 26 for the spring contact 7, one end of the primary heating coil is connected with the thermostatic bar 12 on which it is mounted, as indicated at 27, and said bar is directly connected with the stationary contact 6, as shown in Fig. 4 so that under normal working conditions the ignition circuit will be completed by way of terminal 25, primary heating coil 11, thermostatic bar 12, stationary contact 6, spring contact 7 and terminal 26. If the circuit remains closed for a dangerous length of time, as predetermined upon, coil 11 heats the bar 12 sufficiently to cause it to make contact with the terminal 13 for the secondary heating coil 10, which latter then quickly heats up the thermostatic bar 9 to such an extent as to cause said bar to release the plunger and allow the spring contact to separate from the stationary contact and thus break the ignition circuit. The circuit for the secondary heating coil 10 may be completed through the switch base 16, which is usually in the form of a metallic box, by fastening the thermostatic bar 9 directly to the box by connecting one end of the heating coil 10 with the bar and by providing an external terminal 28 in electrical connection with the box.

The terminal 13 for the heating coil 1[illegible] is of novel construction, comprising as it does, a screw stud engaged within a tubular bushing 29 set in the rear wall of the box or casing 16, there being a spring [illegible] coiled about said bushing and engaged between the inner wall of the box and an abutment washer 31 at the contact end of said contact screw 13. This spring, acting as it does against the inner wall of the box, serves to retain the bushing in place, which is entered from the outside of the box and at the same time acts frictionally to hold the contact screw in its adjusted position. The outward end of the contact screw may be slotted, as indicated, or otherwise constructed for engagement by an adjusting tool such as a screwdriver, so that the point at which the main thermostatic bar 12 will close circuit through the unlatching heating coil may be readily determined.

The invention will from the foregoing be seen to possess many advantages, particularly in the ease with which the switch may be locked or rendered inoperative and again be made operative and controlled as desired.

The open side of the switch casing may be closed by a suitable cover such as that indicated at 32, having flanges 33 engaged over ribs or flanges 34 at the edge of the casing.

I claim:

1. In a switch of the character described, a supporting base, circuit controlling contacts on said base, a removable operating member for said contacts, a support for said operating member readily removable from the supporting base and arranged when engaged on the supporting base to permit movement of the operating member for the opening and closing of the circuit through the switch contacts and means for detachably securing said support for the operating member on the supporting base, whereby said support and the operating member carried thereby may be entirely detached from the supporting base, and whereby when said support is engaged with the supporting base the operating member may be actuated to

perate the switch contacts for opening or losing the circuit, and means whereby the perating member may be left in position ith the contacts in open or closed circuit osition.

2. In combination, switch contacts, a supporting bushing, a plunger for controlling he switch contacts slidably engaged in the ushing, a socket for the bushing and means or yieldingly securing said bushing in the ocket.

3. In combination, switch contacts, a supporting bushing having a locking shoulder n the side thereof, a contact controlling lunger slidably mounted in the bushing nd having shoulders for engagement with he opposite ends of the bushing, a socket or supporting the bushing with the plunger carried thereby in operative relation to he switch contacts, and securing means engaged with the shoulder on the bushing.

4. In combination, switch contacts, a plunger for controlling said contacts, a removble bushing for supporting the plunger in perative relation to the contacts, and spring eans for yieldingly and removably securg said bushing in such position.

5. In combination, a switch base provided ith a socket, contacts mounted on said se, a bushing removably engageable in id socket, spring means engaging said shing to yieldingly retain the same in the cket, a plunger slidably engaged in the shing for controlling the switch contacts, d shoulders on the plunger for engagent with opposite ends of the bushing to mit the switch operating movements of the nger, and arranged to form abutments the bushing when the bushing is inserted or removed from the socket by means of plunger.

6. In combination, switch contacts, a tular guide, a hairpin spring embracing d tubular guide and having one arm reof projecting within the guide, a bush- engageable within the tubular guide and provided with an annular groove to receive the inwardly projecting spring arm aforesaid, and a contact controlling plunger having a limited sliding movement within the bushing.

7. As an article of manufacture, a supporting bushing having an annular locking groove therein for engagement by securing means and a switch controlling plunger having a limited sliding movement in said bushing.

8. The combination in a switch, of a casing, an interiorly threaded post passed through said casing from the outside to the inside thereof, a contact screw rotatably engaged in said tubular post at the inside of the casing and provided with means at its outer end for engaging with an operating tool, and a coil spring engaged about the tubular post between the inner wall of the casing and the inner end of the contact screw to frictionally retain said screw in the position to which it is adjusted from the outside of the casing.

9. As an article of manufacture, a pull-out switch operating plunger and a supporting bushing having limited sliding movement thereon and provided with a locking shoulder for engagement with a locking device when said plunger with its bushing is pushed into a seat in a switch.

10. In a switch of the character described, a supporting base having a tubular guide, a bushing removably engaged in said guide, a plunger having a limited sliding movement in the bushing, circuit controlling contacts on the base positioned to be controlled by the plunger in the push-and-pull movements thereof, and spring means for yieldingly securing the bushing in the tubular guide therefor and arranged to yield on the application of a pulling force to the plunger to enable the plunger and attached bushing being entirely withdrawn from the base.

JOHN F. CAVANAGH.

C. R. PELTON AND J. A. HAND.

ELECTRIC SWITCH.

APPLICATION FILED JULY 31, 1920.

1,397,777.

Patented Nov. 22, 1921.

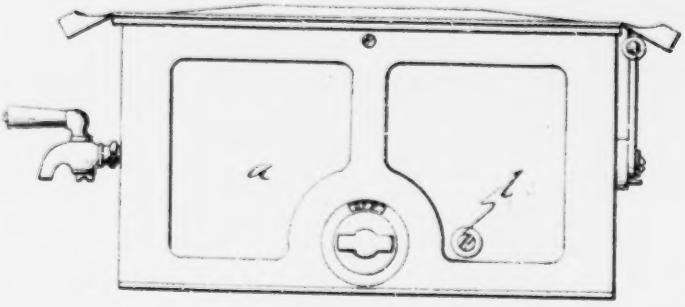

Fig. 1

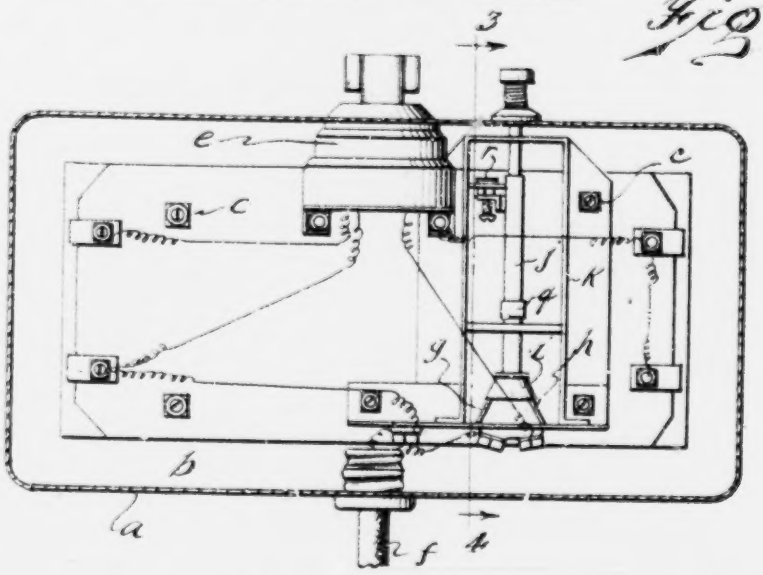

Fig. 2

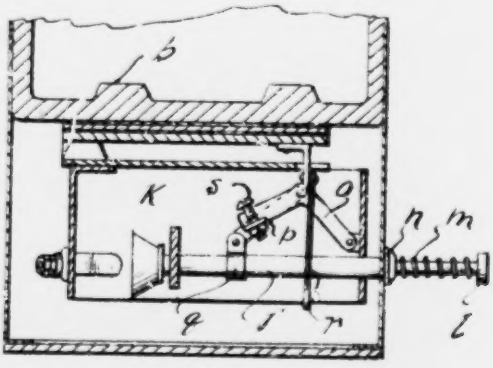

Fig. 4

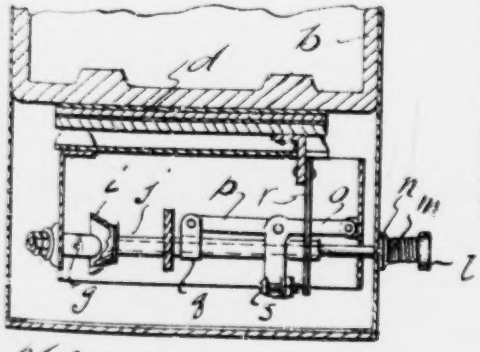

Fig. 3

Inventor

Chauncey R. Pelton,

Jay A. Hand

By Stuart & Barnes

Attorney

354

UNITED STATES PATENT OFFICE. 1,397,777

CHAUNCEY R. PELTON AND JAY A. HAND, OF DETROIT, MICHIGAN, ASSIGNORS TO THE PELTON & CRANE COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ELECTRIC SWITCH.

1,397,777. Specification of Letters Patent. Patented Nov. 22, 1921.

Application filed July 31, 1920. Serial No. 400,349.

To all whom it may concern:

Be it known that we, CHAUNCEY R. PELTON and JAY A. HAND, citizens of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

This invention relates to switches to be used in connection with heating appliances. The switch is designed specifically for use with a sterilizer but is capable of more general application in its broader aspects.

Automatic switches have heretofore been used with heating appliances but they have been open to the objection that in most of them the thermostat has either been a part of the cut-out switch *per se* or else the thermostat has been used as a catch to retain the switch closed, resulting in strains that bent the thermostat and gave it a permanent set other than originally intended and hence make it unreliable.

It is the object of the present invention to afford a switch, which is very delicately but reliably held so that a minimum stress by the thermostat will initiate its opening, and which puts the thermostat under strain only when a temperature is reached near the temperature at which it acts. This is accomplished by the use of toggle levers maintained substantially on their center line or just over by the pull that serves to snap the switch open when the thermostat initiates the breaking of the toggle.

In the drawings,—

Figure 1 is a front elevation of a sterilizer for dental instruments, showing the setting button for the automatic switch.

Fig. 2 is an inverted plan view of the sterilizer showing the automatic switch.

Fig. 3 is a cross section on the line 3—4 of Fig. 2.

Fig. 4 is a similar section showing the automatic switch open.

The switch is shown used with a sterilizer for dental instruments. Of this apparatus, *a* is the outer shell, *b* the basin, to the bottom of which is secured by threaded studs and nuts *c* the heating unit *d*, provided with a suitable resistance coil (not shown). A hand switch *e* serves to control the heating element by switching on more or less coils in the heating element or completely cutting off all the coils. This is old construction and need not be described any further.

It will be noted that interposed in the line from the flexible electric conduit *f* are a pair of spring finger terminals *g* and *h* which can be connected by a copper bridge *i* in the form of a cup carried upon the end of a stem *j*. This stem is guided in reciprocating movement in the box-like hanger *k* which is secured to the bottom of the basin *b* by the same threaded stud and nuts *c*, which secure the heating element to the basin. The stem protrudes through the front of the shell *a* and is provided with a knob *l*. A coiled spring *m* is coiled about the stem between the knob *l* and the thimble *n* and normally tends to thrust the stem *j* outwardly and break the circuit through the switch. However, the stem *j* may be pushed in and it will be firmly held against opening by the thrust of the spring. This action is secured by the two toggle arms *o* and *p*. One —*o*— is pivoted to the hanger *k*, the other —*p*— is pivoted to a clip *q* attached to the stem *j*. A straight line through the two pivots is substantially parallel to the axis of the stem *j*. Hence when the stem *j* is pushed in it will only be stopped when the toggle arms assume a straight line. That straight line being substantially parallel to the axis of the stem, the thrust of the spring on the toggle arms is simply a thrust on a dead center or tends to force the toggle arms against the stem *j* and never will open the toggle. The spring retains the toggle arms substantially in a straight line through the three pivots.

But when in this position the most delicate movement, which has a component at right angles to the straight line through the three pivots, will break the toggle when applied at the center pivot or knee. It may be well described as a hair trigger movement. Now this movement is supplied by the bowing of the thermostat *r*, constructed of metals of different co-efficients of expansion. The thermostat bows in as the temperature increases and at a given temperature, determined by the adjustment of the screw *s* on the end of the bell crank toggle arm *o*, touches and stresses the bell crank arm with a hair trigger movement, breaks the dead

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center and then the spring *m* comes into play. With a snappy, positive action it pulls the stem *j* out and opens the switch.

The value of this switch will be evident. The strain on the thermostat is a minimum, hence it in no way becomes distorted or set so as to be variable with usage. The switch action is quick and positive and brought about solely by the energy stored in the spring.

The cup-shaped bridge centers the contacts and at the same time offers no resistance to the opening of the switch, yet affords the necessary pressure with the spring contacts to give a good electrical connection.

What we claim is:

1. A thermal cut-out, having in combination, a bridge for a switch, a pair of toggle arms coupled up with the bridge and when in substantially straight line position holding the bridge against a tendency to move into open position, and a thermostat arranged to apply movement at the knee of the toggle solely to break the same and allow the bridge independently of the energy of the thermostat to move into open position.

2. A thermal cut-out, having in combination, a bridge, a spring tending to move said bridge into open position, a pair of toggle arms resisting such movement when in substantially their straight line position, and a thermostat arranged to apply a stress to the toggle at the knee solely to trip the toggle and let the energy of the spring move the bridge.

3. A thermal cut-out, having in combination, a bridge, a spring tending to move said bridge into open position, a pair of toggle arms maintained substantially upon dead center by the thrust of the spring and opposing the opening of the bridge and thermally responsive means for stressing the toggle at the knee solely for breaking the same.

4. A thermal cut-out, having in combination, a bridge, a reciprocating stem carrying the bridge, a pair of toggle arms connected with the stem having two pivots in a line substantially parallel with the axis of the stem, a spring tending to project the stem outward along its axis to move the bridge into open position, and thermally responsive means for stressing the toggle at its kn when a given temperature is reached to tr the toggle and allow the spring to move t bridge.

5. A thermal cut-out, having in combin tion, a bridge, a longitudinally-guided ste carrying the bridge, a spring for projectin the stem along its axis to move the brid into open position, a toggle arm pivotal supported upon a stationary pivot, anoth toggle arm connected thereto and support on a pivot carried by the stem, the li through the pivots being substantially pa allel to the axis of the stem, and thermal responsive means for stressing the toggle the knee to trip the same when a determin temperature is reached.

6. A thermal cut-out, having in combi tion, a bridge, a stem slidable longitudina and carrying the bridge, a spring for p jecting the stem and moving the bridge i open position, a pair of toggle arms resisti the movement of the stem by the spring a stressed by the spring-pressed stem on st stantially dead center, and thermally sponsive means for stressing the toggle the knee to trip the same when a determi temperature is reached.

7. A thermal cut-out, having in combi tion, a bridge, a stem carrying the brid and slidable longitudinally, a spring coi about the stem for thrusting the stem out move the bridge into open position, a pair toggle arms resisting this movement by suming a dead center position, one of arms being a bell crank, and a thermos for stressing the bell crank when a giv temperature is reached.

8. A thermal cut-out, having in combi tion, a bridge, a stem carrying the brid and slidable longitudinally, a spring f thrusting the stem out to move the brid into open position, a pair of toggle arms, o a bell crank resisting this movement by suming a dead center position, an adjusta contact screw on the end of the bell cra arm, and a thermostat for stressing a screw.

In testimony whereof we affix our sig tures.

CHAUNCEY R. PELTON
JAY A. HAND.

E. C. WEBSTER.

ELECTRIC STOPPER FOR FLUID CONTAINERS.

APPLICATION FILED APR. 12, 1920.

358

1,400,646.

Patented Dec. 20, 1921.

Fig. 1.

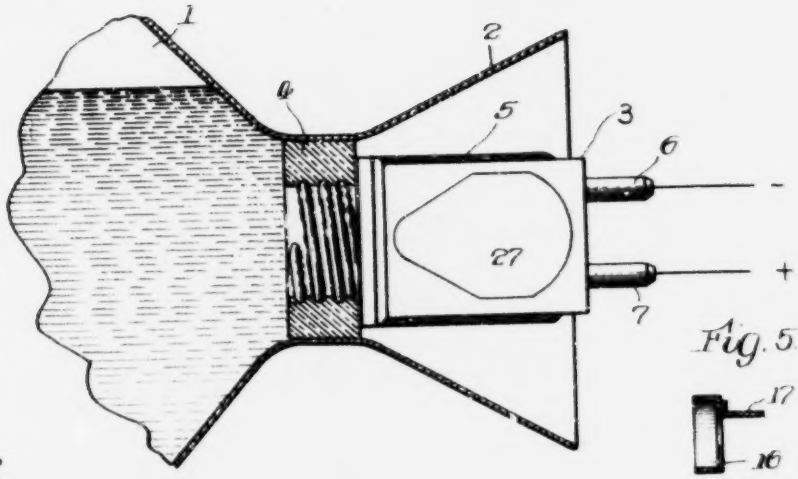


Fig. 5.

Fig. 2.

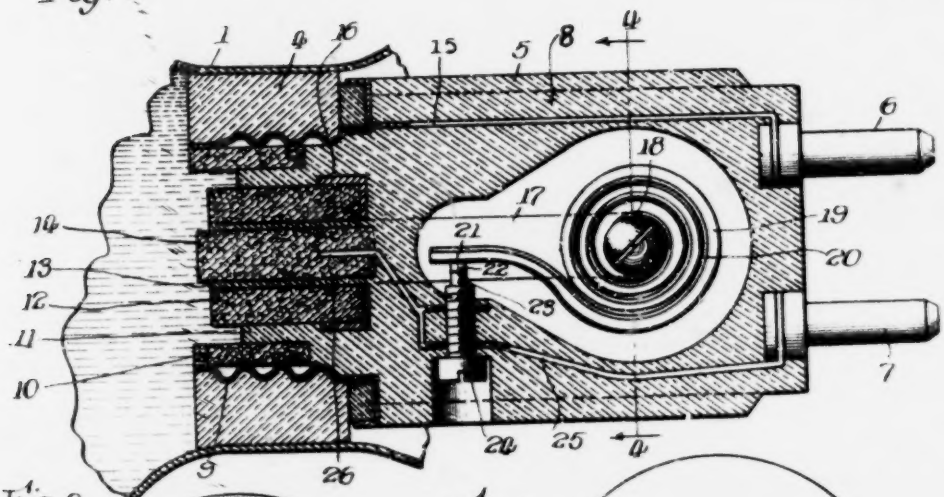


Fig. 3.

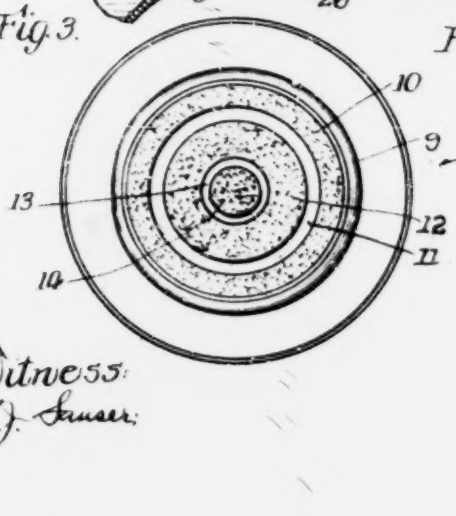
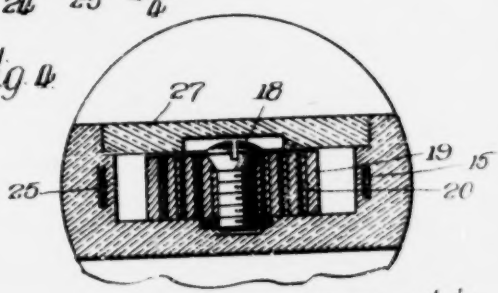


Fig. 4.



Witness:
A. J. Fauser.

Inventor:
E. C. Webster
By W. E. Williams
Atty

UNITED STATES PATENT OFFICE.

ERNEST CRESTON WEBSTER, OF CHICAGO, ILLINOIS.

ELECTRIC STOPPER FOR FLUID-CONTAINERS.

1,400,646. Specification of Letters Patent. Patented Dec. 20, 1921.

Application filed April 12, 1920. Serial No. 373,305.

To all whom it may concern:

Be it known that I, ERNEST CRESTON WEBSTER, a citizen of the United States, a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in an Electric Stopper for Fluid-Containers, of which the following is a specification.

My invention relates to an electrical heating element that is incorporated in the plug or stopper of a hot water bottle or other fluid containers for the purpose of heating the fluid contained within, for therapeutic purposes.

The object of my invention is to provide a very simple means carried in the plug, automatically controlled, that will heat the water and at the same time automatically control the action of the electric heating current

The invention is set forth in the claims.

Reference will be had to the accompanying drawings in which Figure 1 is a section through the nozzle of an ordinary rubber hot water bottle.

Fig. 2 is an enlarged view through the plug itself.

Fig. 3 is a bottom plan view looking from the left of Fig. 1.

Fig. 4 is a section on line 4—4 of Fig. 2.

Fig. 5 is a sectional detail of one of the electrical connecting members.

In the drawing 1 indicates the ordinary rubber sack of a hot water bottle. 2 indicates the rubber flaring funnel of the bottle and 3 represents my plug. 4 represents the screw threaded inside collar of the bottle and 5 represents in general outline my heating element and plug. 6 indicates the negative electrode terminal and 7 the positive terminal. These points are connected with any regular slip socket electrical connection to a source of electrical supply from the general current service line.

The body of my plug is made of a suitable insulating material normally employed for such purposes, but in this instance, I prefer to make it out of bakelite, indicated by 8. By this method of manufacture I mold into the block which forms the plug the metal parts, which are held in place by being molded into the body of the bakelite.

The ordinary metal screw threaded end which forms the stopper of the bottle is indicated by 9, which screws into the collar 4 in making a closure for the bottle. On the inside of this screw threaded end 9 there is an annular carbon block 10 molded in place as indicated. For insulation from this annular carbon block 10 there is a portion 11 of bakelite and this section of bakelite has within it an annular carbon block 12 and it is provided on its inside with an annular insulation 13 of bakelite, and on the interior of this bakelite there is a central cylindrical carbon block 14.

The annular block 10 is in electrical connection with the metallic threaded portion 9 and this in turn is connected through the copper bar 15 to the negative electrode 6.

The annular carbon block 12 is provided with a metallic cap 16 which is connected with a copper bar 17 to a central pivot pin or screw 18 which is in electrical connection with a thermostatic coil made of a soft piece of metal 19 coiled upon a harder piece of metal 20 and finally terminates in an end 21 having a contact piece 22 engaging a secondary contact piece 23 which is in electrical connection by means of a screw 24 with a copper bar or band 25, which is in electrical connection with the electrode 7. This electrical bar 25 with its screw 24 is in electrical connection at 26 with the central cylindrical plug 14 at all times.

Whenever the contact point 22 is in touch with the contact point 23, then the annular carbon plug 12 is also in electrical connection with the electrode 7, through the medium of the connection 25. This is the normal situation when the heating is desired. The electric current then travels from the annular carbon electrode 10 around through the water to the annular carbon piece 12 and in a lesser degree to the cylindrical carbon plug 14. As the fluid in the container heats up, owing to the travel of the electric current through the water across the nose of the inside end of the plug as above indicated, the temperature rises in the plug itself and when this temperature reaches a desired regulated point, through the medium of the screw 24 the thermostat coil or bar indicated by 19 and 20, through the variation in the construction and expansion of the two metals out of which the said coil is made, springs the end 21 away from the screw 24 carrying the contact point 22 away from the contact

point 23 and thus breaking the electrical circuit through the thermostatic coil and shutting off the current travel through the annular plug or carbon block 12.

However, the current continues to remain through the electrode 14 being connected across through the fluid to the annular carbon block 10. But this amount is relatively slight but is sufficient to keep the circuit closed and thus prevent arcing across the points 22 and 23 as the contacts are broken at those points through the movement of the coiled thermostatic parts 19 and 20.

When a limited amount of fluid is used the temperature of the fluid in the container continues to rise further through the travel of the current through the water from the block 14 to the block 10, then gas or vapor is generated within the bottle itself and this cuts down the travel of the current as the gas is replaced by the water and thus automatically breaks the circuit entirely.

When the temperature falls again the thermostat coil brings in contact again the points 22 and 23 and the vapor in the fluid container condenses and the fluid again makes the connection across the carbon contact blocks and the heating is renewed and so on, and the fluid container becomes its own regulator to keep the predetermined temperature of the water at all times.

The thermostat coil as indicated by 19 and 20 is made in the usual manner of making instruments of this kind, having metals of different degrees of expansion so that as the temperature changes there is a bend takes place in a manner well known in instruments of this kind.

The object of this particular arrangement of electrical heating elements with a thermostat control of the current passing through the electrodes is to provide, first; a rapid heating capacity for the heating stopper and second, a slow generation of heat approximating, in heat generation, the amount of heat being radiated, thereby, maintaining a constant temperature of the fluid container without the too frequent separation of contact points 22 and 23.

The arrangement whereby some current is still allowed to flow after the contact points 22 and 23 are separated, serves to prevent the arcing and consequent destruction of the points caused by arcing.

The cavity in which this coil is placed is covered by any suitable inclosure block or container as indicated by 27, making a complete smooth plug having the general utility of an ordinary stopper for an ordinary rubber water bottle.

The heating is performed by what may be termed a water arc, which is an economical conversion of electricity into heat, confined in the manner shown in this case. The intensity of the heat generated may be increased by the addition of a little com salt or washing soda, or other material the fluid, which in the case of water creases the conductivity of the water wit the container.

What I claim is:—

1. The combination with a container liquid to be heated, of a stopper carrying its inner end primarily insulated heat electrodes adapted to be connected by liquid, a main circuit and a branch cir both leading to said electrodes, and me whereby heat exceeding a predetermi limit automatically interrupts one of circuits.

2. The combination with a container liquid to be heated, of a stopper having wardly exposed heating electrodes to be nected by the liquid, a thermostat arran to receive heat from said electrodes adapted to lessen without interrupting heating current, automatically, when temperature of the container exceeds a determined limit.

3. In a device of the class describe screw threaded stopper for a bottle vided with an annular conducting nos nozzle adapted to come in contact with fluid, and forming a part of the electric cuit through the fluid in the bottle; in c bination with two other contact points posed to the action of the fluid, insul from each other, connected to the same ductor and adapted to be connected fluid in the bottle, one of the said two trical contacts continuously being conne with its electrical conductor and the o one intermittently connected through medium of a thermostat under the influe of the heat generated within the bottle.

4. In a device of the class desc ed stopper for a fluid container having trodes located therein and insulated each other and exposed to the fluid wi the bottle, whereby the latter makes electrical connection across between the trodes; in combination with a thermo adapted to open and close an electric cir and said thermostat located in conne with the plug and acted upon by the generated in the bottle.

5. The combination with a liquid tainer and a stopper therefor having inner end primarily insulated heating el trodes adapted to be connected by liqui be heated in the container, of a thermos device acted upon by heat generated a electrodes and controlling the maxim the current while the current continue

6. In a device of the class desc heating element for a fluid container form of a plug secured into the flui tainer in combination with a therm bar in the form of a coil located wit plug or stopper and adapted to op

lose an electric heating circuit under the influence of the heat generated in the fluid ontainer.

7. In a device of the class described, a topper for a fluid container, electric conacts and electrodes mounted within the topper having contact points exposed to the quid within the bottle whereby the latter erves as a part of the electric circuit conection; in combination with a thermostatic ontrol for making and breaking the elecic heating circuit and said thermostatic ntrol located within the body of the stopr and adapted to be acted upon by the at generated in the bottle; and means dapted to vary the adjustment of the temrature at which the thermostat controls e electric circuit.

8. In a device of the class described, a ug for a fluid container having an outer eve-like ring serving as a part of the heatg unit; in combination with an inner nalogous ring insulated from the first ng and having an exposed end adapted to come in contact with the fluid in the bottle and connected with the other pole of the electric circuit whereby the fluid within the bottle may close the circuit by forming the electrical connection between the two said annular conductors.

9. In a device of the class described, an annular conducting member located near the periphery of the internal end of the plug; in combination with a central cylindrical block and an annular block encircling the said cylindrical block and both blocks connected to the same pole of the electric circuit, but one of the said blocks being permanently connected and the other intermittently connected to the said same poles.

Signed at Chicago, in the county of Cook and State of Illinois, this 31st day of March, 1920.

ERNEST CRESTON WEBSTER.

Witnesses:
B. J. BERNHARD,
F. ZOBEL.

W. CAMPBELL.

ELECTRIC FIRELESS COOKER.

APPLICATION FILED DEC. 5, 1921.

364

1,416,263.

Patented May 16, 1922.

Fig. 1.

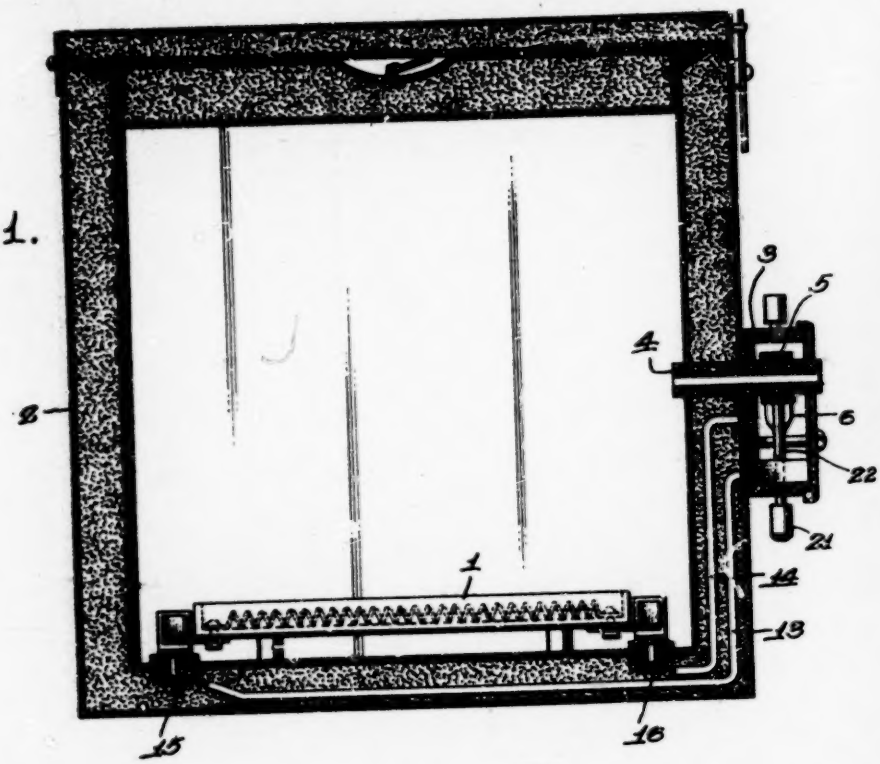
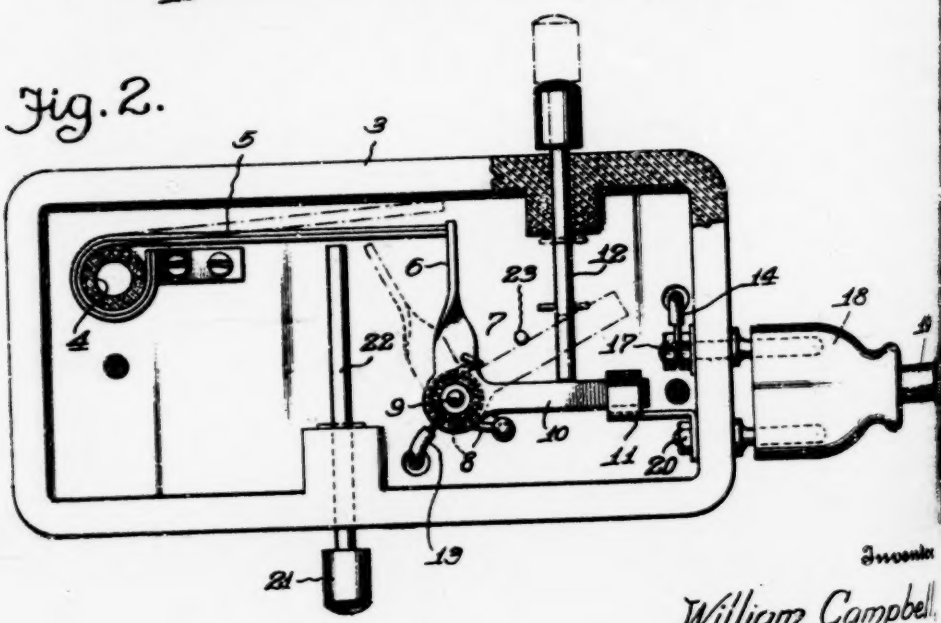


Fig. 2.



Inventor

William Campbell,

By Richard Rapelye

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM CAMPBELL, OF DETROIT, MICHIGAN.

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ELECTRIC FIRELESS COOKER.

1,416,263. Specification of Letters Patent. Patented May 16, 1922.

Application filed December 5, 1921. Serial No. 519,976.

To all whom it may concern:

Be it known that I, WILLIAM CAMPBELL, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Electric Fireless Cookers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to cookers and more particularly to such devices wherein the cooking is done in a closed and insulated chamber and heat is furnished by an electric heater placed in the chamber.

The object of the invention is to provide a very simple and efficient means for automatically opening the electric circuit of the heater to control the heat, and to so arrange such means that its operation will be governed by the kind of material cooked or heated in the chamber. A further object is to provide certain other new and useful features whereby other advantages are obtained in the construction and operation of the cooker, all as hereinafter more fully described.

With the above and other ends in view, the invention consists in the matters hereinafter set forth and more particularly pointed out in the appended claims, reference being had to the accompanying drawings in which Figure 1 is a transverse vertical section through an insulated compartment or chamber and showing an electric heater therein and controlling means illustrative of the invention in operative position thereon; and Fig. 2 is an enlarged longitudinal vertical section through the controlling means.

All materials cooked or heated contain more or less moisture and when heated, this moisture passes off in the form of steam or vapor. The larger the body of material, the slower will be the process of converting this moisture into steam, and steam will not be rapidly generated until the body of material has been thoroughly heated all the way through. By retaining this heat, as in an insulated chamber, the cooking of the material will continue after the generation of further heat is discontinued, and the material will therefore regardless of its bulk, be thoroughly cooked by the initial heat, or the heat required to bring the entire body to a temperature which will rapidly convert the moisture therein into steam or vapor. The generation of heat may therefore be controlled by the steam generated in cooking to effect the cutting off of the current at the proper time, which in each instance will be when the heat becomes sufficient to rapidly generate steam.

To effect the cutting off of the current to the electric heater 1 which is positioned within an insulated chamber or box 2 of any suitable construction having walls which are spaced apart with an insulating material between, a suitable switch mechanism is placed within an electrically insulated casing 3 upon the outer side of the box 2 with a conduit 4 extending through the wall of the box or chamber and through said casing, around which conduit is wrapped a thermostatic or temperature responsive element 5 with a free extended end of said element arranged to be engaged by an arm 6 of a rotary switch 7 which is pivoted in the casing 3 and actuated in one direction of the turning movement by a spring 8 coiled about the pivot bolt 9 of the switch. A second arm 10 of this switch is adapted to engage a terminal member 11 when the switch is turned against the action of the spring 8 by means of a push rod 12 extending through the top of the casing and provided with a push button on its outer end, its inner end engaging the upper side of the arm 10 at a distance from the switch pivot, so that an inward push upon this rod will rotate the switch, bringing the arm 10 into contact with the terminal 11 and the arm 6 into engagement with the free end of the thermostatic or temperature responsive element 5 which is shown as in the form of two thin flat strips of metal, the contacting faces of which are welded or otherwise firmly united and the metals of which the strips are formed having different expansive qualities under the influence of heat, so that when the conduit 4 is heated by the passage of steam therethrough and this heat is transmitted to that portion of the strips which are wrapped about the conduit, the difference in expansion of the two strips will cause the free end of the element to move upwardly, disengaging said end from the switch arm 6 and permitting the spring 8 to turn the switch to open position with the arm 10 out of engagement with the terminal member 11.

Wires 13 and 14 lead from the terminals 15 and 16 respectively, of the heater 1 to the casing 3 with the wire 14 electrically connected to the pivot or stud 9 of the

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switch 7 and the wire 14 connected to a terminal 17 on the casing to which one of the wires of an electric circuit is connected in any convenient manner, as by a socket 18 secured to the end of a cable 19 carrying the circuit wires leading from any suitable source of current (not shown), such as an electric lighting circuit. The other wire of the circuit is connected by the socket 18 to a terminal 20 on the casing, to which terminal the terminal or contact member 11 is electrically connected.

When the switch 7 is closed by pressing inward upon the push rod 12, an electric circuit is established from the leading-in wire through the terminal 20, contact 11, switch arm 10, wire 13, heating element 1 and out through the wire 14 and terminal 17 to the other wire contained in the cable 19.

As soon as sufficient heat is generated in the closed and insulated compartment 2 to cause the rapid generation of steam, this steam, in passing out through the conduit 4 which is open to the atmosphere and is the only outlet from the chamber, will heat the conduit and thermostatic element 5 in contact therewith sufficiently to cause said element to deflect and disengage its free end from engagement with the arm 6 of the switch which switch will at once snap to open position, breaking the heater circuit and stopping the further generation of heat.

The length of time that the heat will be generated is therefore controlled by the generation of steam in the chamber 2, and this generation of steam is controlled directly by the kind and bulk of material placed in the chamber to be cooked or heated, the device therefore becomes automatic in its operation and all foods placed in the chamber will be thoroughly cooked without attention on the part of the operator. As the container or chamber 2 is tightly closed with the exception of the single small passage, tube or conduit 4 and insulated against heat radiation, loss of heat is minimized and the material will retain the heat and continue to cook until thoroughly done, after the current is automatically turned off, thus minimizing current consumption and making the cooking or heating operation automatic.

Should it be found desirable to cut off the current prior to the automatic operation of the switch 7, said switch may be operated to open it, by pressing inward upon a push button 21 carried by the outer end of a push rod 22 passing through the bottom of the casing 3 and extending upward therein with its inner end adjacent the lower side of the free end portion of the thermostatic element 5 to disengage said end from the arm 6 of the switch. A stop 23 may also be provided in the casing 3 to limit the turning movement of the switch when turned to open position by its spring 8.

By this arrangement the cooking chamber 2 may be tightly closed except for the very small tube or conduit 4 through which the steam is permitted to escape directly into the atmosphere, and the steam is therefore retarded in its escape and the opening of the switch retarded until such time as the chamber and its contents becomes sufficiently heated to generate steam rapidly causing a steam pressure in the chamber which will force a flow of hot steam through the small conduit sufficient to heat the thermostatic element and cause it to operate to release the switch.

A simple device which is automatic and efficient in its operation is therefore secured and the switch and its operating mechanism is positioned outside the insulated container or chamber where it will not be affected by the moisture and where it is very accessible for replacement or repair. It is also obvious that as the outlet conduit 4 passes through the casing 3 and opens directly into the atmosphere, and as said conduit is not restricted, when sufficient steam pressure has been generated to cause it to flow rapidly through the conduit, the steam will not be retarded in the conduit to cause condensation therein and interfere with its being heated but will be rapidly heated by the flow of hot steam therethrough to operate the switch upon the temperature of the contents of the container reaching the necessary point to do the cooking.

Changes in the form, construction and arrangement of parts are contemplated within the scope of the appended claims and I do not, therefore, limit myself to the particular construction shown.

Having thus fully described my invention, what I claim is:—

1. The combination with a closed chamber and heating means for said chamber, of a conduit leading from said chamber and open at its outer end to the atmosphere, and temperature responsive means out of the path of the heated fluid passing through said conduit for regulating said heating means.

2. The combination with a closed chamber and heating means for said chamber, of a conduit leading from said chamber and open at its outer end to the atmosphere, and temperature responsive means outside said conduit to which heat is transmitted by said conduit from fluid passing therethrough, said means being arranged to control said heating means.

3. The combination with a closed chamber and heating means for said chamber, of a conduit leading from said chamber and open at its outer end to the atmosphere, a temperature responsive element contacting said conduit, and means controlled by

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d element for regulating said heating
eans.

4. The combination with a closed cham-
r, an electric heater for said chamber, and
electric circuit for said heater, of a con-
it leading from said chamber to the at-
sphere, a temperature responsive element
erated by heat imparted by fluid passing
rough said conduit, and means controlled
said element for interrupting said cir-
it.

5. The combination of a closed and insu-
ed heating chamber, means for supplying
t to said chamber to produce steam by the
ating of material placed in the chamber to
cooked or heated, an open passage lead-
from said chamber to the atmosphere
rough which the generated steam is free
flow, and controlling means for said heat-
means including a thermostatic element
ated outside said passage and operated by
t imparted to the passage by the steam
aping therethrough.

6. The combination of a closed and insu-
ed heating chamber, an electric heater
hin said chamber, a circuit for said
ater, a casing outside the insulated cham-
, a conduit extending through a wall of
chamber and through said casing with
inner end opening into the chamber and
outer end open to the atmosphere, and
trolling means within the electric cir-
t located within said casing and includ-
a temperature responsive element adapt-
to be affected by the heat of a fluid pass-
through said conduit.

7. The combination with a closed cham-
, an electric heater within said chamber and an electric circuit for said heater, of a tubular conduit of uniform diameter extending through the wall of the chamber with its inner end opening into the chamber and its outer end open to the atmosphere, and means for interrupting the electric circuit including a temperature responsive element embracing said conduit.

8. The combination with a closed and insulated heating chamber, an electric heater for said chamber, and an electric circuit for said heater, of a tubular conduit extending through a wall of the chamber with its outer end open to the atmosphere and a circuit controlling means including a temperature responsive element comprising strips of metal having different expansive qualities encircling said tubular conduit.

9. The combination with a closed and insulated heating chamber, an electric heater in said chamber, an electric circuit for said heater, of a tubular conduit extending through the wall of the chamber with its outer end open to the atmosphere, a casing surrounding the outer end portion of the tubular conduit, an electric switch for said circuit within said casing, and controlling means for said switch comprising a temperature responsive element to which heat from fluid passing through the conduit is transmitted thereto by said conduit.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM CAMPBELL.

Witnesses:
LEWIS E. FLANDERS,
KARL H. BUTLER.

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H. P. DONLE.

CIRCUIT BREAKER.

APPLICATION FILED OCT. 28, 1921.

1,431,220.

Patented Oct. 10, 1922.

Fig. 1.

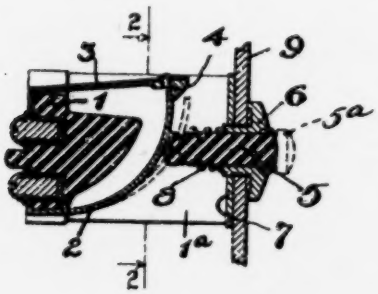


Fig. 2.

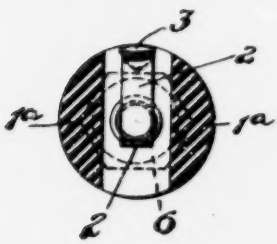


Fig. 3.

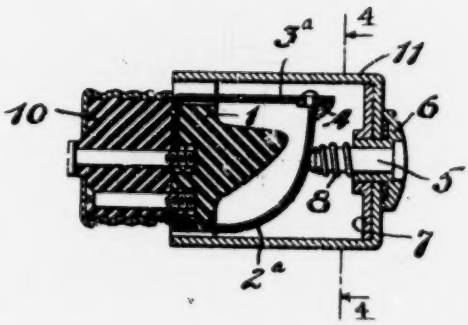
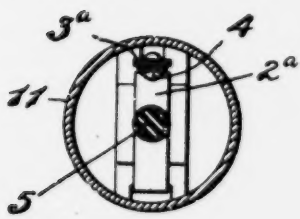


Fig. 4.



H. P. Donle, INVENTOR.

BY Mitchell & Allen

ATTORNEY.

Patented Oct. 10, 1922.

371
1,431,220

UNITED STATES PATENT OFFICE.

HAROLD POTTER DONLE, OF MERIDEN, CONNECTICUT, ASSIGNOR TO THE CONNECTICUT TELEPHONE & ELECTRIC COMPANY, INCORPORATED, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

CIRCUIT BREAKER.

Application filed October 28, 1921. Serial No. 511,075.

To all whom it may concern:

Be it known that I, HAROLD P. DONLE, a citizen of the United States of America, residing at Meriden, Connecticut, have invented a new and useful Improvement in Circuit Breakers, of which the following is a specification.

My invention relates to circuit breakers, and consists in providing means whereby said device will be automatically operated in the event an excess amount of current is passed through the circuit controlled by said breaker.

The object of my invention is to provide an exceedingly simple, compact, efficient, and reliable construction.

In the accompanying drawings—

Figure 1 is a longitudinal section of the circuit breaker as it would appear when installed.

Fig. 2 is a cross section on the line 2—2 of Fig. 1.

Fig. 3 is a longitudinal sectional view of a modification.

Fig. 4 is a cross section on the line 4—4 of Fig. 3.

I will first describe that particular form of my invention which is shown in Figs. 1 and 2, in which, 1 represents an insulating base of circular outline. 2 is a spring of conducting material which is mounted at one end on the base 1 at one side of the center. 1^a—1^a are side pieces preferably integral with the base 1 and forming a channel between them. The spring 2 is bowed so as to extend across the channel toward the opposite side of the base. 3 is what I will term a thermostatic trigger, which is also made of conducting material and is ordinarily constructed of two layers of metal which have different co-efficients of expansion, whereby changes in temperature will cause said trigger to bend. One end of this trigger is secured to the base 1, while the other end is provided with a latch nose 4. Suitable terminal pieces or connections on the base 1 may be provided for the fixed end of the spring 2 and the trigger 3. 5 is a plunger which is mounted in a suitable guide bushing 6. 7 is a plate secured to the ends of the side members 1^a—1^a. The bushing 6 has a threaded connection with the plate 7. 8 is a light spring coiled around that part of the plunger 5 which projects through the bushing. 5^a is a head on the outer end of the plunger. The spring 8 operates in a direction to cause the head 5^a to be seated against the outer end of the bushing 6. 9 represents a portion of a supporting panel such as the dashboard of an automobile. The device is held to such a panel by being clamped between the plate 7 and the flanged head of the bushing 6 as shown in Fig. 1. When the circuit is open the parts assume approximately the dotted line position shown in Fig. 1, wherein the free end of the spring 2 is electrically disconnected from the trigger 3 and operates to push the plunger 5 outwardly so that it will operate as a tell-tale to indicate that the circuit breaker is open. To close the circuit, the operator presses in on the plunger 5. This movement causes the spring 2 to snap under the nose 4 of the trigger 3 so that the parts will assume approximately the position shown in solid lines of Fig. 1.

In the event a short circuit occurs in the circuit controlled by this breaker, the excess current passing through the thermostatic trigger will heat up said trigger and cause it to bow backwardly so as to release the spring 2 and break said circuit. The use of such a device will be found to be of great convenience in automobile use as a substitute for a fuse. It not infrequently happens that automobile owners fail to provide themselves with extra fuses and thus frequently find themselves helplessly stalled, or with lights out. By this equipment, as soon as the short circuit or defect is corrected, the operator may reset the automatic breaker by merely pushing in on the plunger 6.

In the form shown in Figs. 3 and 4 I have provided the base with a threaded plug extension 10 of the type usually employed on an incandescent lamp, the construction of which is clearly shown in Fig. 3, and is too well known to require special description. In this form of the invention, I have provided the base with a supplemental housing or casing 11, which may be of any suitable material, and which will constitute a suitable ornamental covering for that part of the device which would be

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exposed in the event attachment were made by means of the screw threaded attaching plug 10 or the like.

Inasmuch as the spring 2 when released by the trigger must necessarily be strong enough to push the plunger 5 against the tension of the spring 8, I prefer in some instances to form the spring 2 of two blades lying one against the other as shown at 2^a in Figs. 3 and 4, one of said blades being of a material such as a brass or copper alloy, which has a fine current carrying capacity, the other blade being made of steel which has a fine spring quality which will not easily become set but which is much more reliable with brass or the like for the purpose of functioning as a spring. So also the trigger indicated at 3^a may be similarly laminated. By this construction, the durability and dependability of the device may be substantially increased.

I claim:

1. An automatic circuit breaker comprising a base of insulating material, a thermostatic trigger mounted on said base, a latch shoulder adjacent the free end of said trigger, a bowed spring secured at one end to said base, the other end lying adjacent to said latch shoulder and arranged to be engaged therewith and disengaged therefrom, a manually operable plunger arranged to engage an inclined portion of said spring to force the latter into engagement with said shoulder by longitudinal movement of said plunger, a second spring co-acting with said plunger to move the latter toward said first mentioned spring, the strength of the first mentioned spring being in excess of the strength of the second mentioned spring whereby said plunger will be moved to a tell-tale position when the circuit between the first mentioned spring and the trigger is broken.

2. An automatic circuit breaker comprising a circular base of insulating material, a thermostatic trigger mounted on said base at one side of the axis thereof, a latch shoulder adjacent the free end of said trigger, a bowed spring secured at one end of said base and extending across the axis thereof to a point adjacent to said latch shoulder and arranged to be engaged therewith and disengaged therefrom, a manually operable plunger arranged to reciprocate axially with relation to said base and to engage a portion of said spring to force the latter into engagement with said shoulder, and means for yieldingly moving said plunger toward said spring, a bushing for said plunger, said spring operating to push said plunger outwardly when the former is disengaged from said trigger.

3. An automatic circuit breaker comprising a circular insulating base having opposite integral extensions forming a slot between them, a thermostatic trigger carried by said base and arranged within said slot, a spring also carried by said base and arranged within said slot, the free end of said spring lying adjacent to the free end of said trigger, a plate carried by said extensions, said plate having a central passage, a flanged bushing arranged to fit said passage, a plunger carried by said bushing for operating said spring, and a threaded engagement between said plate and bushing whereby said device may be clamped to a dashboard support, or the like.

4. An automatic circuit breaker comprising a base of circular outline formed of insulating material, a plate carried by said base, a thermostatic trigger mounted on said base back of said plate, a bowed spring also mounted on said base back of said plate, one end of said trigger and one end of said spring being free and arranged for interlocking engagement under normal circuit conditions, a plunger acting against an inclined portion of said spring to move the same into interlocking engagement with said trigger, a bushing passing through said plate and carrying said plunger, the outer end of said bushing having a flanged head, the shank of said bushing being threaded into said plate whereby a support for said circuit breaker may be clamped between said plate and flanged head.

5. An automatic circuit breaker comprising an insulating base, a thermostatically controlled trigger carried thereby, a bowed spring also carried by the base, means for interengaging one end of said spring with said trigger comprising a manually operable element arranged to engage said spring to force it into engagement with said shoulder when said element is moved in one direction, a second spring co-acting with said element to move the latter in the aforesaid direction, the strength of the bowed spring being in excess of the strength of the second mentioned spring whereby said element will be moved to a tell-tale position when said bowed spring and trigger are disengaged.

6. An automatic circuit breaker comprising a base, a thermostatically-controlled current-carrying trigger carried thereby and insulated therefrom, a current-carrying spring arranged to be engaged by and disengaged from said trigger, a combined spring-operating and tell-tale device manually movable into one position to cause the spring to engage the trigger, with means to hold said tell-tale device in said position while said trigger and spring are engaged, said tell-tale device being movable by said spring into another position when the latter is disengaged from the trigger.

HAROLD POTTER DONLE

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A. ZECCHINI.

ELECTRIC LIGHTER.

APPLICATION FILED APR. 15, 1921.

1,437,701.

Patented Dec. 5, 1922.

2 SHEETS—SHEET 1.

FIG. 1

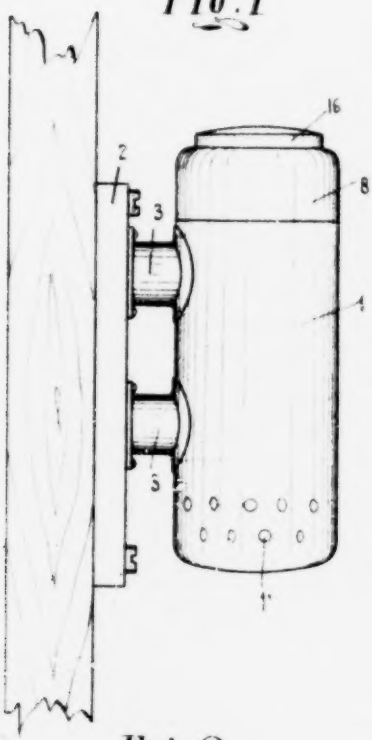


FIG. 3

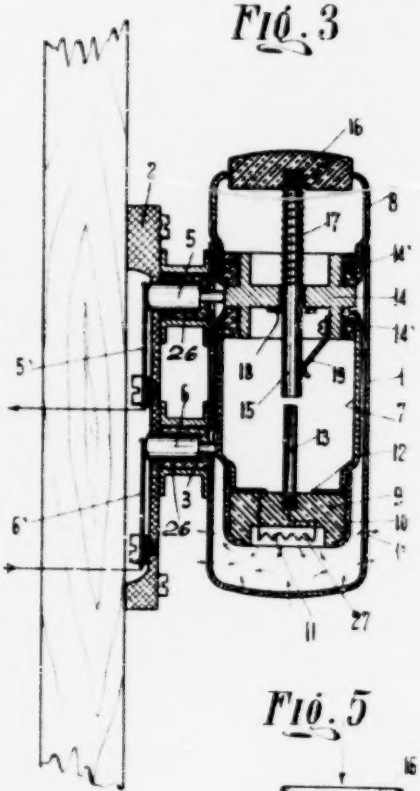


FIG. 2

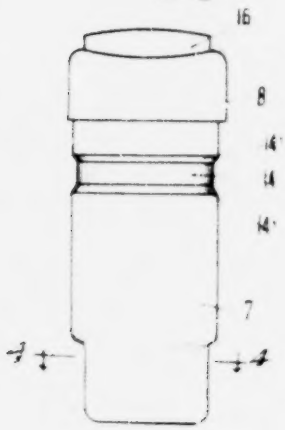


FIG. 4

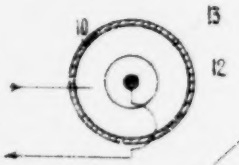
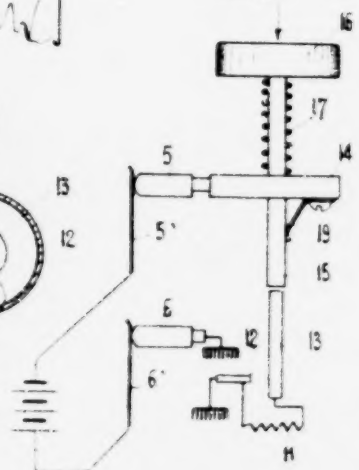


FIG. 5



Inventor—
Alfredo Zecchini
By Lawrence Langner
Atty.

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A. ZECCHINI.

ELECTRIC LIGHTER.

APPLICATION FILED APR. 15, 1921.

1,437,701.

Patented Dec. 5, 1922.

2 SHEETS-SHEET 2.

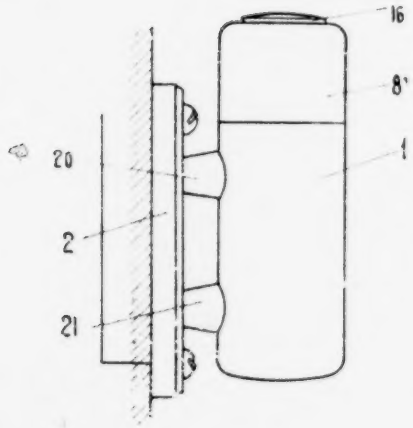

FIG. 6

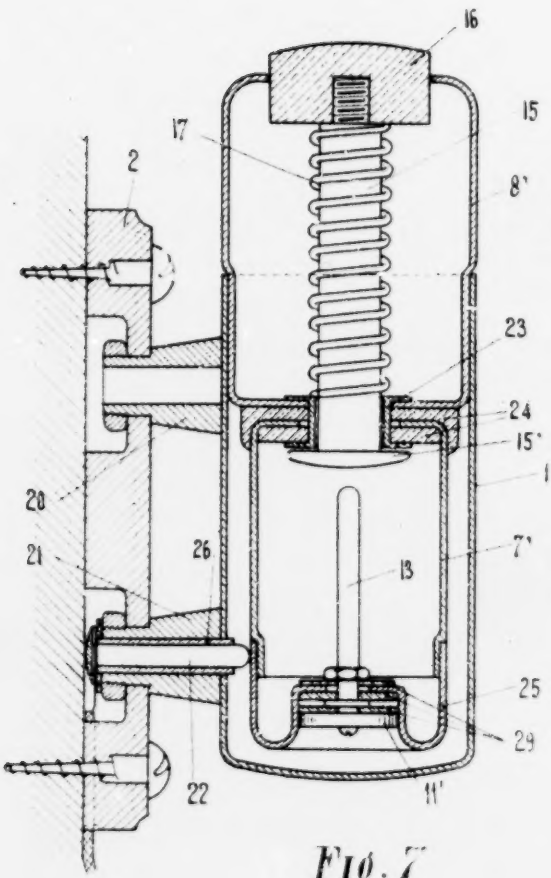

FIG. 7

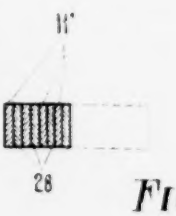

FIG. 9

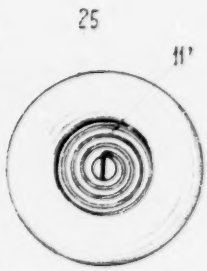

FIG. 8

Inventor—
Alfredo Zecchini
By Lawrence Langner
Atty.

Patented Dec. 5, 1922. 377 1,437,701

UNITED STATES PATENT OFFICE.

ALFREDO ZECCHINI, OF TURIN, ITALY.

ELECTRIC LIGHTER.

Application filed April 15, 1921. Serial No. 4

To all whom it may concern:

Be it known that I, ALFREDO ZECCHINI, a subject of the King of Italy, and resident of Turin, Italy, have invented certain new and useful Improvements in Electric Lighters (for which I have filed an application in Italy, April 26, 1920), of which the following is a specification.

This invention relates to electric lighters for cigars and the like.

This invention has for object a lighter comprising a plug which is provided with an ignition resistant member and with means for inserting this resistant member in and out of circuit of a source of current, said plug being removably located within a stationary socket having current feeding connections.

Further this invention comprises an arrangement for feeding the current to the ignition resistant member whereby the plug carrying said resistant member may be freely removed from its cooperating socket without any connecting wire being provided between said plug and socket, as well as an automatic switch which holds the circuit open when the device is not in use.

Finally this invention comprises a particular arrangement of the ignition resistant member and other useful features hereinafter described and claimed.

The annexed drawings show by way of example two embodiments of the device according to this invention.

In said drawings Figure 1 is the side view of a device according to this invention in inoperative position: Figure 2 is a side view of the plug removed from the socket: Figure 3 is the central section of the device in inoperative position: Figure 4 is the section on line 4—4 of Figure 2: Figure 5 is a diagram of the electric circuit: Figure 6 is a side view of another construction of the device in inoperative position: Figure 7 is a central section of the same to an enlarged scale: Figure 8 is an end view of the removable plug showing the ignition resistant member: Figure 9 is a fragmentary transverse section of the resistant member made to an enlarged scale on line 9—9, Figure 8.

The device shown by Figures 1–3 comprises a socket 1 which is connected by means of hollow arms 3—3 to a plate 2 intended to be secured to a supporting wall. Within said arms 3—3 are located the pins 5—6 which are properly insulated by means of bushings 26 [illegible] ar by one end against the spring con[illegible] 5'—6' connected with the wires of the [illegible]rcuit of a source of current; the opposite ends of said pins project into the hollow of the socket 1.

The socket 1 is further provided with holes 1' for the circulation of air therethrough.

Within the socket 1 is removably located a metal plug comprising a grasping head 8 at the end intended to remain out of the socket 1 and heating means at its end entering said socket.

Said plug comprises a metal shell 7 having at one mouth a block 9 of insulating material secured on it by a sleeve 10 screwed on said shell; at its opposite mouth said shell 7 is secured to a partition 14 of conducting material carrying the head 8, insulating rings 14' being located between said partition 14 and the head 8 as well as the shell 7.

The refractory block 9 provides a front recess 27 in which is located a resistant wire 11 having one end connected to the sleeve 9 and shell 7 by means of a conducting washer 12; the opposite end of said wire 11 is connected to a stem 13 projecting centrally into the shell 7.

Said partition 14 has a smaller diameter than the shell 7 and head 8 so as to provide a circular groove, and has a central hole lined with a bushing 18 in which is mounted to slide endwise a central stem 15.

This stem 15 has one end opposite to the end of the stem 13 and its opposite end is provided with a knob 16 of insulating material which projects beyond the edge of the head 8.

A spring 17 bearing against the partition 14 and the knob 16 holds the stem 15 with its end removed from the opposite end of the stem 13; the electric connection of the stem 15 with the partition 14 is ensured by a brush 19 secured to said partition 14 and contacting with said stem.

The arrangement of the partition 14 within the plug is such as when the plug is inserted in the socket 1, the outer rim of the partition 14 contacts with the pin 5 and at the same time the pin 6 contacts with the surface of the shell 7.

The outer surface of the insulating ring 14' between the partition 14 and the shell 7, and the shape of the shell 7 in its portion under the pin 6 must be such that when the plug is removed from its socket the shell 7

leaves the pin 6 before the edge of the shell 7 under the lower ring 14' comes in contact with the pin 5, for the purpose of preventing the source of current from being short-circuited through said pins 5 and 6 and the metal body of the shell 7.

When the plug is inserted in the socket 1, as shown by Figure 3, the partition 14 and the stem 15 are electrically connected with the pin 5, and the washer 12 to which leads one end of the resistant wire 11 is electrically connected with the pin 6 through the metal body of the shell 7.

The circuit is therefore open, the opposite ends of the stems 15 and 13 being removed from each other and it is held open so long as the knob 16 is not depressed.

By depressing the knob 16 against the action of its associate spring 17 the stem 15 is carried in contact with stem 13 connected with one end of the resistant member 11 and therefore the current flows through this resistant member.

When it is desired to use the lighter the knob 16 is pushed down and is held in such a position for some time as necessary for causing the heat developed by the current to make the resistant wire incandescent; thereafter the head 8 is grasped and the plug is removed from its socket the incandescent wire being then adapted to be used for lighting a cigar or the like.

The wire which is made incandescent by the passage of electric current keeps its high temperature for a time quite sufficient for the purpose of igniting a cigar or the like.

At the time the plug is being removed from the socket 1 the source of current is not liable to be short-circuited because the shell 7 leaves the pin 6 before coming into contact with the pin 5, as described.

The Figures 6 and 7 show a simplified embodiment of the lighter according to this invention in which the stationary socket 1 is connected to the plate 2 by an earthed arm 20 and by another hollow arm 21 within which is located a pin 22 insulated by a sleeve 26 and connected with one terminal of a source of current whose opposite terminal is earthed; the inner end of the pin 22 projects into the hollow of the socket 1.

The removable plug intended to be located within the socket 1 consists of two metal shells 7'—8'; the shell 7' has a smaller diameter than that of the hollow of the stationary socket 1 and a portion of the shell 8' has such a diameter as to fit in the socket 1. Said shells 7'—8' are connected at their adjacent ends by means of a conducting sleeve 23 having its edges upturned over the edges of the front walls of said shells, and are insulated from each other by insulating washers 24.

The shells 7'—8' are open at their other ends and the shell 7' carries an end cap 25 providing a space for the ignition resistant member 11'.

This resistant member (see Figures 8 and 9) consists of a strip 11' of a proper metal wound on a spiral together with an adjacent strip 28 of insulating and refractory material; the outer portion of said metal strip 11' contacts with the cap 25, whilst its inner end is electrically connected with a stem 13 concentric with the shell 7' and insulated from the cap 25 by means of insulating washers 29.

At the end mouth of the shell 8' is located the insulating knob 16 secured to a conducting stem 15 which passes through the sleeves 23; this rod is provided with a lower head 15' which is held by a spring 17 removed from the end of the stem 13.

When the parts are in the position shown by Figure 7 the circuit is cut out; by pushing down the knob 16 the stem 15 is lowered and its head 15' is carried into contact with that of the stem 13. Therefore the circuit of the source of current is closed between the pin 22 and the earthed arm 20 through the cap 25, resistant member 11', stems 13—15, sleeve 23, shell 8', one pole of the source being connected to the pin 22 and the other being earthed, as described.

Therefore the current flows through the resistant member 11' and this latter is made incandescent so that when the plug is removed from the socket said resistant member may be used for purpose of lighting a cigar or the like.

The last described embodiment does not require the use of parts of refractory material; its assembly is made more easy and its size is reduced.

In this construction for avoiding the short-circuiting of the source of current it is sufficient that the portion of the shell 8' entering the socket 1 is longer than the portion of the shell 7' lying under the level of the pin 22 when the plug is in position in its socket.

The resistant heating member consisting of a flat metal strip wound together with a strip of insulating material has the advantage that the whole part may be made of a reduced size; therefore the heat is accumulated in a small body and the temperature of this latter is increased, so that it may be used for igniting a cigar or the like after the circuit of the resistance has been held closed long enough for heating it to the required degree.

What I claim as my invention and desire to secure by United States Letters Patent is:—

1. An electric lighter for cigars and the like, comprising a stationary member, feeding means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and

separated from said stationary member, a heating resistant part in this removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being connected with the ends of said resistant part, and means controlling the circuit in which said resistant member is inserted.

2. An electric lighter for cigars and the like, comprising a stationary member, feeding means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and separated from said stationary member, a heating resistant part in this removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being connected with the ends of said resistant part, means controlling the circuit in which said resistant part is inserted and means holding said controlling means in open-circuit position when the device is out of service.

3. An electric lighter for cigars and the like, comprising a stationary member, feeding means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and separated from said stationary member, a heating resistant part in this removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being in circuit with said resistant part and a knob-controlled spring holding said circuit open when the device is out of service.

4. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, said plug having an outer recess, a heating resistant part in said recess, feeding parts in said socket each connected with a pole of a source of electric current, parts in said plug adapted to contact with said feeding parts and connected with the ends of said resistant part and a spring switch holding normally open the circuit of said resistant part.

5. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, feeding parts in said socket each connected with a pole of a source of electric current, said plug consisting of two parts insulated from each other one of which has an outer recess, a heating resistant part located in said recess, a conducting member carried by the other part of said plug, a knob controlled movable part mounted to move in said conducting member, a stationary part connected with one end of said resistant part and adapted to be contacted by said movable part, a spring holding these parts removed from each other, said resistant part having its other end connected with the part of the plug enclosing it and one of the feeding parts of the socket leading to said conducting member and the other one leading to the part of the plug connected with said resistant part.

6. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, feeding parts in said socket each connected with a pole of a source of electric current, said plug consisting of two parts insulated from each other one of which has an outer recess, a heating resistant part located in said recess, a conducting member carried by the other part of said plug, a knob controlled movable part mounted to move in said conducting member, a stationary part connected with one end of said resistant part and adapted to be contacted by said movable part, a spring holding these parts removed from each other, said resistant part having its other end connected with the part of the plug enclosing it and one of the feeding parts of the socket leading to said conducting member and the other one leading to the part of the plug connected with said resistant part, and means for preventing said contacting parts of the plug from short-circuiting the source of current when the plug is being removed from said socket.

7. An electric lighter for cigars and the like, comprising a stationary socket, a plug removably fitting in said socket, feeding parts in said socket each connected with a pole of a source of electric current, said plug consisting of two parts insulated from each other one of which has an outer recess, a heating resistant part located in said recess, a conducting member carried by the other part of said plug, a knob controlled movable part mounted to move in said conducting member, a stationary part connected with one end of said resistant part and adapted to be contacted by said movable part, a spring holding these parts removed from each other, said resistant part having its other end connected with the part of the plug enclosing it and one of the feeding parts of the socket leading to said conducting member and the other one leading to the part of the plug connected with said resistant part, said feeding parts of the socket and cooperating parts of the plug being so shaped and positioned as to prevent the part of the plug entering said socket from short-circuiting the source of electric current when the plug is being removed from said socket.

8. An electric lighter for cigars and the like, comprising a stationary member, feed-

ing means in said member connected with the terminals of a current source, a removable member adapted to be engaged with and separated from said stationary member, a heating resistant member comprising a flat resistant metal strip wound together with an insulating refractory ribbon, this resistant part being located in said removable member, conducting means in this removable member adapted to contact with said feeding means when said two members are engaged with each other, these conducting means being connected with the ends of said resistant part, and means controlling the circuit in which is inserted said resistant part.

Signed at Turin, Italy, this 22 Mar. 1921.

ALFREDO ZECCHINI.

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March 24, 1925.

1,530,730

H. L. LEEB

ELECTRIC SWITCH

Filed Sept. 17, 1921

Fig. 1.

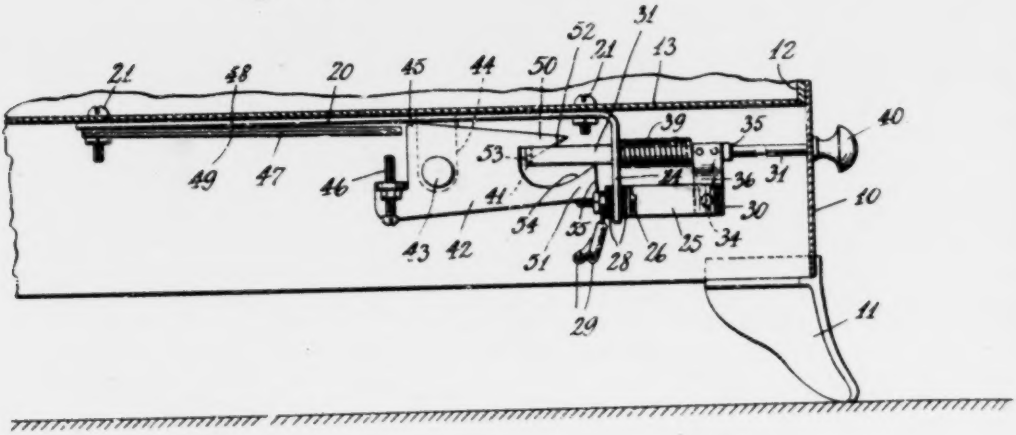


Fig. 2.

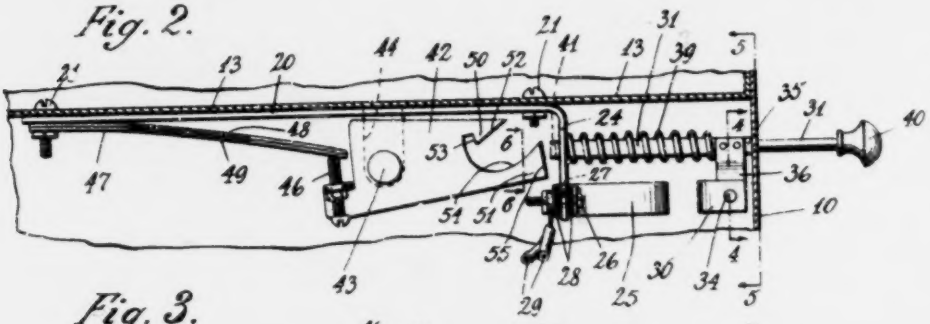


Fig. 3.

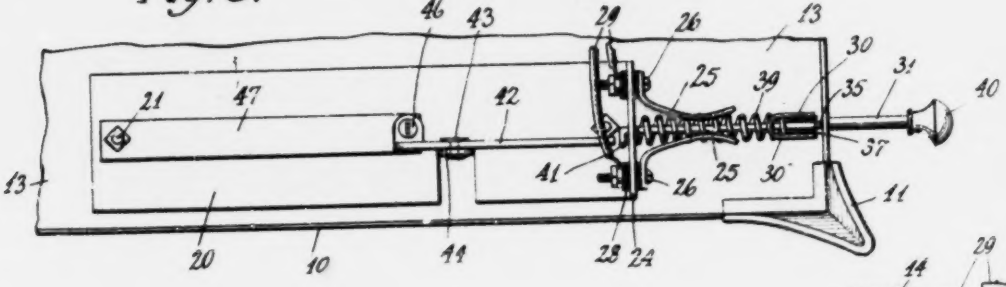


Fig. 6.

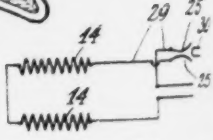


Fig. 7.

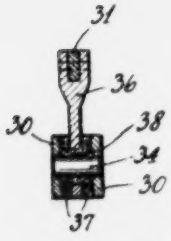


Fig. 4.

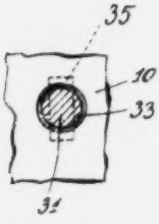
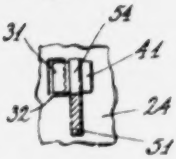


Fig. 5.



INVENTOR.
Henry L. Leeb
BY
Robert W Byerly
his ATTORNEY.

Patented Mar. 24, 1925. 383 1,530,730

UNITED STATES PATENT OFFICE.

HENRY L. LEEB, OF SOUTH ORANGE, NEW JERSEY, ASSIGNOR TO THE PROMETHEUS ELECTRIC COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

ELECTRIC SWITCH.

Application filed September 17, 1921. Serial No. 501,295.

To all whom it may concern:

Be it known that I, HENRY L. LEEB, a citizen of the United States, residing at South Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Electric Switches, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to electric switches, and particularly to safety switches for electric heating devices.

An object of the invention is to provide a thermostatically operated cut-out switch in the heating circuit of an electric heating device to prevent overheating of the device or any particular part thereof.

A further object of the invention is to permit reclosing the circuit, after it has been thermostatically opened, without the replacing of any part of the apparatus.

A still further object of the invention is to prevent closing the circuit while the temperature exceeds the safety limit, thus eliminating arcing at the switch contacts.

In carrying out the invention I provide an electric heating device with a switch having fixed and movable contact members connected to control the heating current, a spring tending to separate the contact members, and thermostatic means adapted to retain the contact members in engagement when the temperature of a specified part of the device is below a predetermined safety limit and automatically to release the movable contact member when the temperature exceeds this limit.

In order to permit re-closing of the circuit without replacing any part of the apparatus, I provide a latch to retain the contact members in engagement and a thermostatic strip composed of layers of metals of different coefficients of expansion to trip the latch. One end of the strip is secured with its high expansion layer inward against a part of the device affected by the heat of the electric heating elements while the other end of the strip is free to swing outwardly as the temperature rises and is positioned to trip the latch when the temperature exceeds a predetermined limit.

The invention in its most complete form includes also a thermostatically operated stop which prevents moving the contact members into engagement while the temperature is above a predetermined maximum. This feature has proved of great practical value since it eliminates injury to the contact members by arcing caused by attempts to close the switch before the temperature of the device has fallen below the safety limit so that the latch will retain the contact members in engagement.

In order that the invention may clearly be understood I will describe in detail the specific embodiment of it shown in the accompanying drawings which illustrate the application of the safety switch to an electrically heated sterilizer. In the drawings:—

Fig. 1 is a side elevation of the switch in closed position showing a portion of the sterilizer in section;

Fig. 2 is a view similar to Fig. 1 showing the switch in open position;

Fig. 3 is a bottom view of the switch and a portion of the sterilizer showing the switch in open position as in Fig. 2;

Fig. 4 is a transverse section of the movable contact member and its support taken on the line 4—4 of Fig. 2;

Fig. 5 is a transverse section on the line 5—5 of Fig. 2 showing the actuator rod and a portion of the sterilizer casing;

Fig. 6 is a transverse section on the line 6—6 of Fig. 2 showing the actuator rod and parts of the controlling member and the supporting plate; and

Fig. 7 is a diagram of the electric connections.

The sterilizer to which the switch is applied has an outer casing 10 supported upon feet 11. In the upper part of the casing is a tank 12 for the water to be heated. Below the bottom 13 of the tank 12 and within the lower portion of the casing 10 are located electrical heating elements 14 (Fig. 7) for heating the tank. The safety switch is secured to the bottom of the tank at any convenient point either at one side of, or between, the heating elements.

The framework of the safety switch consists of a supporting plate 20 which is secured to the outside of the bottom 13 of the tank 12 by bolts 21. One end portion 24 of the supporting plate 20 is bent outwardly from the bottom 13. Fixed contact members 25 are mounted on the portion 24 of the plate near its lower end by means of

bolts 26 which are insulated from the supporting plate by sleeves 27 and washers 28 of insulating material. The fixed contact members 25 are connected in circuit with the heating elements 14 by means of wires 29. A movable contact member 30 is mounted upon the actuator 31 which, in the form shown, comprises a rod or plunger slidably mounted in a hole 32 in the portion 24 of the plate 20, and a hole 33 in the sterilizer casing 10.

The right hand portion of the actuator 31 is round as is the hole 33, while the left hand portion of the actuator is flat and the hole 32 is elongated. The end of the flattened portion provides a shoulder 35 which limits the outward movement of the actuator by engagement with the casing 10. The movable contact member 30 is U-shaped and is secured by means of a rivet 34 to a short bar 36 depending from the actuator. The contact member 30 is insulated from the bar 36 by washers 37 and a sleeve 38 of insulating material. The actuator 31 is normally thrust outwardly, bringing the movable contact member 30 out of engagement with the fixed contact members 25, by a compression spring 39 which reacts between the portion 24 of the supporting plate and the bar 36.

The outer end of the actuator may be provided with a push button 40 while its inner end is bent at right angles to form a catch 41.

A thermostatically operated controlling member 42 is provided to control the movements of the actuator 31. In the form illustrated the member 42 is a flat lever fulcrumed upon a rivet 43 secured to a downwardly bent portion 44 of the supporting plate 20. The flat lever 42 is in line with the catch 41 of the actuator while just out of line with the body of the actuator.

The outer end of the lever 42 is the heavier so that the lever normally occupies the position illustrated in Fig. 1, in which it is retained by contact with the supporting plate 20 at 45. At the inner end of the lever 42 is an adjustable contact screw 46, through which the lever is actuated by a thermostatic strip 47 secured near one of its ends to the lower side of the supporting plate 20 by means of one of the bolts 21.

The thermostatic strip 47 is composed of a layer 48 of metal of a relatively high coefficient of expansion, such as brass, and a layer 49 of metal of a relatively low coefficient of expansion, such as steel, the two layers having their adjacent surfaces welded or otherwise secured together. The strip is attached with the layer 48 of high-coefficient metal against the supporting plate 20. As the supporting plate 20 is made of metal or other heat conducting material, as is also the bottom 13 of the tank 12, the strip 47 is always at substantially the same temperature as the water in the tank 12. The strip 47 remains straight and lies flat against the supporting plate as shown in Fig. 1 when the water in the tank is at low temperature. As the temperature rises the strip bends outwardly from the supporting plate owing to the difference in expansion of the metals of which it consists. The screw 46 may be adjusted so that the thermostatic strip 47 tips the lever to raised or "hot" position shown in Fig. 2, when any desired predetermined temperature is reached. When the device is used in connection with an electric sterilizer as illustrated, the strip is secured to the tank, either at the bottom of the tank as illustrated, or elsewhere below the normal level of the liquid in the tank, and the screw is adjusted so that the strip will bring the lever to the position shown in Fig. 2, when the temperature of the strip rises above the boiling point of the water or other liquid in the tank 12.

The outer end of the lever 42 is formed to provide a latch 50 to retain the actuator 31 in closed circuit position while the temperature is below the safety limit and a stop 51 spaced outwardly from the latch 50 to prevent inward movement of the actuator while the temperature exceeds the safety limit. The latch 50 has an outwardly inclined cam surface 52 and a transverse retaining surface 53. The stop 51 has an inwardly inclined cam surface 54, and a transverse abutment surface 55.

The operation of the switch described is as follows: When the heating device is cool the strip 47 is straight and the lever 42 occupies its normal position as illustrated in Fig. 1. In order to heat the water in the tank 12 the actuator 31 is pushed in from its open-circuit position illustrated in Fig 2, to its closed-circuit position shown in Fig. 1, bringing the movable contact member 30 into engagement with the fixed contact members 25 closing the heater circuit. In this inward movement of the actuator 31 the catch 41 passes clear of the stop 51, and engages the cam surface 52 of the latch 50, slightly raising the right hand end of the lever 42 until the catch 41 passes completely under the cam surface 52 when the right hand end of the lever 42 falls, leaving the parts in the position illustrated in Fig. 1, with the retaining surface 53 of the latch engaging the catch 41 so as to retain the actuator 31 in closed-circuit position. As the device heats up the strip 47 bends downwardly, but so long as water remains in the tank 12 so that the temperature of the bottom of the tank and strip does not exceed the boiling temperature, the strip 47 does not come into contact with the screw 46. If, however, the water is allowed to boil away, the bottom of the tank heats rapidly and the strip 47 bends out far enough to

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press down upon the screw 46 and raise the right hand end of the lever 42 from its normal position to its hot position shown in Fig. 2. This releases the catch 41 from the retaining surface 53 of the latch permitting the spring 39 to move the actuator 31 outwardly breaking the circuit. As the actuator 31 is moved outwardly by the spring 39 the catch 41 encounters the cam surface 54 of the stop 51 momentarily depressing the right hand end of the lever 42 and permitting the catch 41 to pass over the stop 51. The parts then occupy the position illustrated in Figs. 2 and 3. If an attempt is made to push in the actuator while the parts are in this position, the inward movement is arrested by engagement of the catch 41 with the abutment surface 55 of the stop 51, before the movable contact member 30 comes in contact with the fixed contact members 25 or sufficiently near these members to cause arcing. The stop 51 is so positioned that the actuator 31 cannot be pushed in again until the bottom 13 has cooled below the danger point and the lever 42 has reassumed its normal position illustrated in Fig. 1, so that when the actuator is pushed in, it is retained by the latch 50.

While the switch has been described in connection with an electric sterilizer, it should be understood that it may be applied to any electrical heating device whether or not the device is designed for heating a liquid. The thermostatic strip of the switch may be secured to any part of the device which is affected by the heat of the electric heating elements, and the apparatus may be adjusted to release the actuator at any desired limiting temperature. The stop may be arranged so as to prevent the closing of the switch until the temperature has fallen to any desired extent and it is not essential that the latch and the stop be both formed upon a single thermostatically operated member. But in order to secure an important advantage of the invention, hereinbefore explained, the stop should be so arranged as not to permit the closing of the switch until the latch has reassumed a position in which it will hold the switch closed.

What is claimed is:

1. A safety switch for an electric heating device, comprising fixed and movable contact members connected to control the heating current, resilient means tending to separate the contact members and a thermostatically operated latch adapted to retain the contact members in engagement when the temperature of the device is below the predetermined limit and to release the movable contact member when the temperature rises above this limit, and a thermostatically operated stop adapted to prevent moving the movable contact member into engagement with the fixed contact member while the temperature is above said limit.

2. A safety switch for an electric heating device, comprising fixed and movable contact members connected to control the heating current; resilient means tending to separate the contact members; and a thermostatically operated controlling member formed to provide a latch adapted to retain the contact members in engagement when the temperature of the apparatus is below a predetermined limit and to release the movable contact member when the temperature rises above said limit, and a stop adapted to prevent moving the movable contact member into engagement with the fixed contact member while the temperature is above said limit.

3. A safety switch for a heating device having electric heating elements, comprising fixed and movable contact members connected to control the heating current; resilient means tending to move the movable contact member away from the fixed contact member; a controlling member formed to provide a latch adapted to retain the movable contact member in contact with the fixed contact member when the controlling member is in its normal position and to release the movable contact member when the controlling member is in its hot position, and a stop adapted to prevent moving the movable contact member into engagement with the fixed contact member when the controlling member is in its hot position; and a thermostatic strip having one of its ends secured to a part of the apparatus affected by the heat of the heating elements and its other end free to bend outwardly and positioned to engage said controlling member and move it from its normal to its hot position when the temperature of the strip rises above a predetermined limit.

4. A safety switch for an electric heating device, comprising fixed and movable contact members connected to control the heating current; a movable actuator to which said movable contact member is secured; resilient means tending to move said actuator into open-circuit position; a catch upon said actuator extending transversely to its line of movement; a thermostatically operated controlling member formed to provide a latch having a cam surface by which said latch may be raised as the actuator is moved into closed-circuit and a retaining surface adapted to engage the catch and retain the actuator in movable closed-circuit position when the temperature of the device is below a predetermined limit and to release the catch when the temperature rises above said limit, and a stop having a cam surface permitting the catch to pass the stop when it is released by the latch and an abutment surface adapted to engage

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the catch and prevent moving the actuator into closed circuit position while the temperature is above said limit.

5. A safety switch for a heating device having electric heating elements, comprising fixed contact members connected in the heating circuit; a movable contact member adapted to close the circuit by engagement with said fixed contact members; a longitudinally movable plunger on which said movable contact member is mounted; a spring tending to move said plunger into open-circuit position; a transverse catch upon said plunger; a flat lever located at one side of the axis of said plunger and parallel thereto and in a line with the said catch, one end of said lever being formed to provide a latch having an inclined surface by means of which the lever may be raised from its normal position when the plunger is pushed into closed-circuit position, and a retaining surface adapted to engage said catch and retain the plunger in closed-circuit position when the lever is in its normal position, and a stop having an abutment surface positioned to permit said actuator to be moved into closed-circuit position when the lever is in its normal position and to prevent such movement of the plunger when the lever is in raised position and an inclined surface permitting the catch to pass when the plunger is moved into open-circuit position; and a thermostatic strip having one of its ends secured to a portion of the apparatus affected by the heat of the heating elements and having its other end free to bend outwardly and positioned to engage said lever and move it from normal position to raised position when the temperature of the strip exceeds a predetermined limit.

6. In a safety switch, the combination of a switch-contact actuator movable inwardly to closed-circuit position and outwardly to open-circuit position, a spring tending to move said actuator outwardly, a catch upon said actuator extending transversely to its direction of movement, a controlling member movable across the line of movement of said catch, thermostatic means for moving said controlling member from its normal position to its hot position when the temperature of said means rises above a predetermined limit, the end of said controlling member being formed to provide a latch having an outwardly inclined cam surface and a transverse retaining surface located in the line of movement of said catch when the controlling member is in normal position, and a stop positioned outwardly from said latch and having an inwardly inclined cam surface and a transverse abutment surface located in the line of movement of said catch when the controlling member is in hot position.

7. In a safety switch the combination of a slidably mounted plunger serving as a switch-contact actuator and movable inwardly into closed-circuit position and outwardly into open-circuit position, resilient means tending to move said plunger outwardly, a transverse catch on said plunger, a controlling lever located in the line of movement of said catch, thermostatic means adapted to engage the inner end of the lever and move the lever from its normal position to raised position when the temperature of said means exceeds a predetermined limit, the outer end of said lever being formed to provide a latch having an outwardly inclined cam surface and a transverse retaining surface positioned in the line of movement of said catch when the lever is in normal position, and a stop located outwardly from said latch and having a rearwardly inclined cam surface and a transverse abutment surface located in the line of movement of said catch when the lever is in raised position.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HENRY I. LEEB

Witnesses:
A. JARECKY,
HILDA M. BECK.

Oct. 6, 1925.

1,556,246

388

C. F. NORDEN

LAMP SOCKET WITH TIMING DEVICE

Filed Nov. 16, 1922

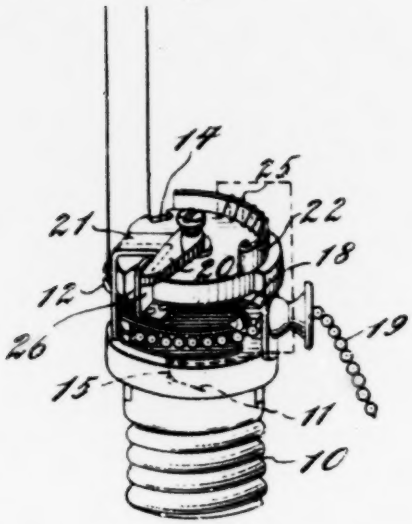

Fig. 1.

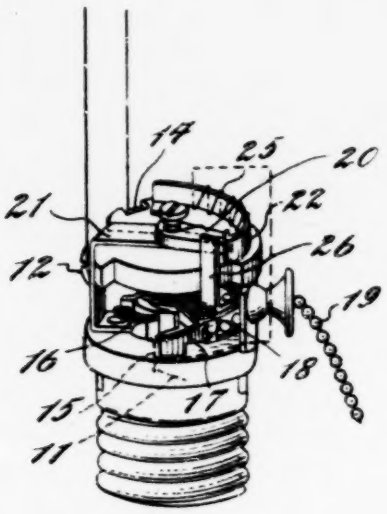

Fig. 2.

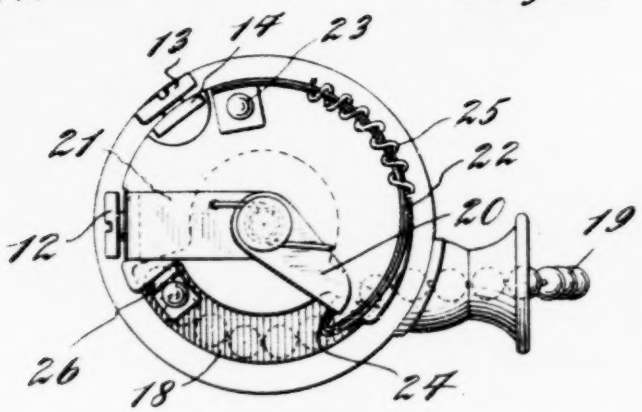

Fig. 3.

Inventor
Charles F. Norden
By Lyford Bell & Seull
Attorneys

Patented Oct. 6, 1925. 389 1,556,246

UNITED STATES PATENT OFFICE.

CHARLES F. NORDEN, OF NEW YORK, N. Y., ASSIGNOR TO HENRY HYMAN & CO., INC., A CORPORATION OF NEW YORK.

LAMP SOCKET WITH TIMING DEVICE.

Application filed November 16, 1922. Serial No. 601,209.

To all whom it may concern:

Be it known that I, CHARLES F. NORDEN, a subject of the Republic of Germany, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Lamp Sockets with Timing Devices, of which the following is a specification.

My present invention relates to a lamp socket provided with a thermostatically controlled switch so that the lamp will continue to burn for a predetermined period after the main switch has been opened in the ordinary manner.

My invention will be best understood from the following description and the annexed drawing showing one form of my invention. In the drawing, Fig. 1 is a view in perspective of a well-known type of lamp socket to which my invention is applied, the parts in Fig. 1 being shown with the main and auxiliary switches open; Fig. 2 is similar to Fig. 1 with the parts in the position where the main switch is opened and the auxiliary switch is closed, and Fig. 3 is a plan of the illustrative arrangement on a somewhat larger scale and with some of the parts in a slightly different position from that of Fig. 2.

Like reference characters indicate like parts in the different views.

In the illustrative form, a lamp socket of a well-known type having a screw portion 10 with which one of the terminals of the lamp connects is provided with a central contact member shown diagrammatically at 11. The main circuit is connected to these terminals in the usual manner through connecting screws 12 and 13, so that when the lamp is screwed into the socket, the current passes through the screw 13 and its attached connector 14 down to the screw socket 10 and from thence through the lamp and the contact member 11, up through the connection 15 and a rotary switch to the terminal 12. These connections are usual and will be understood by those skilled in the art, so that further description thereof will be unnecessary.

The rotary switch in the illustrative form, is of a well-known type which has a fixed contact member 16 and a series of movable contact members 17, the movable contact members being mounted to rotate on the axis of the socket by means of a ratchet device so as to be moved step by step, each alternate step changing the switch from open to closed position and back again.

This step-by-step motion is given to the rotary member of the switch by an oscillating disc 18 mounted to oscillate around the axis of the socket and normally held in the position shown in Fig. 1 by a suitable spring, the chain 19 being connected to the disc so as to move it to the position shown in Fig. 2 against the pressure of this spring.

As will be understood by those skilled in the art, successive pulls on the chain 19 will oscillate the disc 18 through approximately 90° in the illustrative form, and at each oscillation from the position of Fig. 1 to that of Fig. 2, the ratchet will engage the movable main switch member to move it through one step and to bring it either from closed to open position or from opened to closed position, as the case may be. All of the foregoing is old and will be understood by those skilled in the art.

It is desirable in some locations in particular, to arrange the lamp so that when the user wishes to extinguish it, there will be some delay between the operation by the user and the actual extinguishment of the light. I have provided for this in an extremely simple and economical manner, and one which can be readily applied to existing designs for sockets. I provide a shunt around the main switch 16, 17 which includes an oscillating switch element 20, also mounted to rotate on the axis of the socket and connected through its pivot with one side of the main circuit, as through the support 21 to which the binding screw 12 is attached. This shunt circuit also includes a thermostatically controlled latch 22 which, in the form illustrated, is fastened at 23 to the socket and extends in the form of an arc so that the hook end 24 of the latch will normally act as a detent to engage the end of the switch element 20. The latch 22 may act as a resistance member, or it may be provided, as shown, with a resistance wire 25 preferably of German silver and of a resistance suitable for the current to be carried, this wire being wound around the latch 22. With the parts in the position shown in Fig. 2, the shunt circuit passes from the main to member 21, element 20, the end of the latch 22 and the coil 25 to the connection 15 and

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from thence through the lamp to the other side of the main circuit, thus constituting a shunt around the main switch.

Mounted on the disc 18 is a connecting member 26 which is long enough to extend alongside of the element 20 and is arranged so that as the disc 18 moves from the position shown in Fig. 1 to that shown in Fig. 2, it will carry the element 20 into the position shown in Figs. 2 and 3 to be latched by the end 24 of the latch 22. This action takes place when the disc 18 is moved by the chain 19 to close the main switch to turn on the light, but, because of the resistance in the shunt circuit, substantially no current passes through said shunt while the light is burning. The disc 18 and the connecting member 26 return to the position shown in Fig. 1 as soon as the chain 19 is released, and on the next pull of the chain 19 which moves the disc 18 to open the main switch, the connecting member 26 is again brought to the position shown in Fig. 2, but, of course, at this time without any function. The main switch now being open, the lighting current for the lamp passes through the shunt and heats the thermostatically controlled latch 22 to release the element 20 after a predetermined time. The element 20 then moves to the position shown in Fig. 1 to break the shunt and extinguish the lamp, the disc 18 having been returned to the position of Fig. 1 as soon as the chain 19 is released.

It will be noted that by mounting all of the parts on the common axis of the lamp socket, the arrangement is such that the present construction is not seriously affected and that the use of the well-known pull-chain type of switch operation is maintained. It will also be understood that the arrangement which I have shown is merely illustrative and that the construction and arrangement may be varied without departing from my invention.

I claim:—

1. In a thermostatically controlled lamp socket switch for use in a main circuit including a lamp, a switch for opening and closing a break in said main circuit, a reciprocating member to open and to close said switch at alternate reciprocations of said member, a thermostatically controlled latch, a second switch element having a bias to open position but controlled by said latch to be releasably held in closed position, a shunt circuit for making said thermostatically controlled latch operative only when said first mentioned switch is open, and a connection between said reciprocating member and said second switch element to close said shunt circuit and to engage said second switch element with said latch when said reciprocating member is moved to close said main circuit.

2. In a thermostatically controlled lamp socket switch for use in a main circuit i cluding a lamp, a main switch for said ma circuit having a main switch member a ranged to be moved step by step around axis to alternately close and to open sa switch, an oscillating member arranged swing around said axis and to move sa main switch member one step for each osci lation of said oscillating member, a shu circuit around said main switch, said circu including a shunt switch element arrang to oscillate on said axis and a thermostat cally controlled latch, said shunt switch el ment having a bias away from said lat and adapted to be engaged thereby, and co nection between said oscillating member a said shunt switch element to move said el ment into position to be held by said lat when said oscillating member moves sa main switch member into closed positio said shunt circuit being arranged to he said thermostatically controlled latch cause it to operate to release said elemen only when said main switch is open.

3. In a thermostatically controlled lam socket switch for use in a main circuit i cluding a lamp and its socket, a rotatin main switch arranged to turn around th axis of the socket, an oscillating member a ranged to turn about said axis and to mov said main switch to open and to closed pos tion alternately for each oscillation of sa oscillating member, a shunt switch elemen arranged to oscillate around said axis, spring to give the said shunt switch elemen a bias in one direction, a thermostatically controlled latch arranged to engage an hold said shunt switch element against th pressure of said spring, a shunt circui around said main switch, and includin said shunt switch element and said latch and connection between said oscillatin member and said shunt switch element t move said element against the pressure o the spring into position to be engaged an held by said latch when said oscillatin member moves said main switch to clos position, said shunt circuit being arranged to heat said thermostatically controlled latch to cause it to operate to release sai element only when said main switch is open.

4. In a thermostatically controlled lam socket switch, a lamp socket, a main switch rotatable around the axis of the socket ste by step to alternate open and closed posi tions to open and close the main circuit through the lamp, a disc arranged to oscillate around said axis and to move said main switch one step each oscillation of said disc in one direction, a disc spring to return disc after each operative oscillation, a second switch element arranged to oscillate on said axis, a spring to give said element a bias in the same direction as said disc spring gives said disc, a thermostatically controlled latch

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anged to engage and hold said element inst the pressure of its spring, connec- between said disc and said element ar- ged to move said element into engage- nt with said latch when said disc is ved in an operative oscillation and to per- said disc to return while said element is d by said latch and a shunt circuit around said main switch and including said element and said latch, said shunt circuit being arranged to heat said thermostatically controlled latch to cause it to operate to release said element only when said main switch is open.

CHARLES F. NORDEN.

Dec. 1, 1925.

1,563,854

394

R. R. HAUGH

ELECTRIC SWITCH

Filed April 17, 1922

Fig. 1

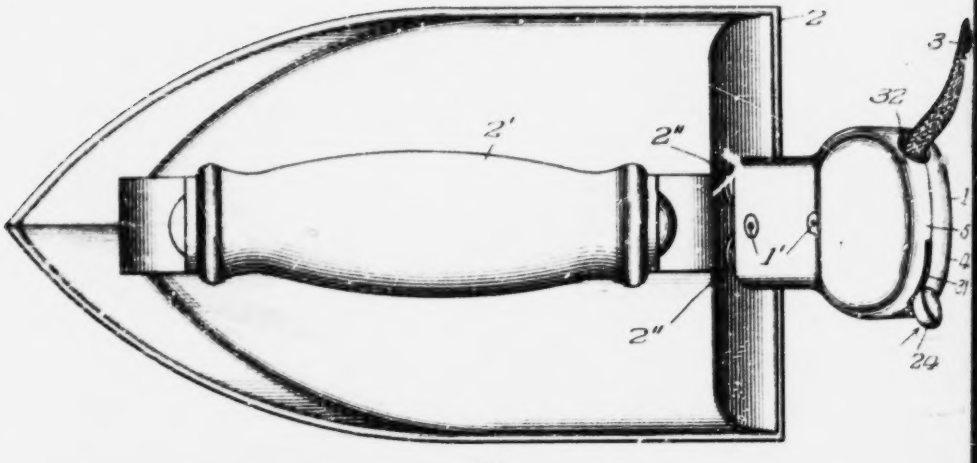


Fig. 2

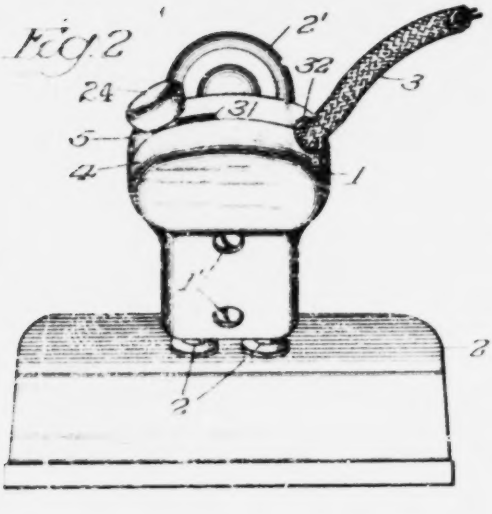


Fig. 3

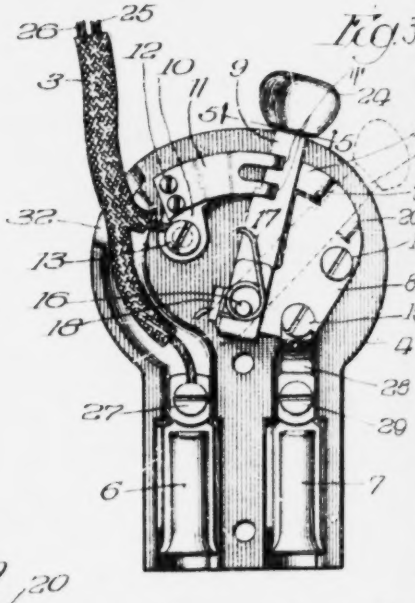


Fig. 4.

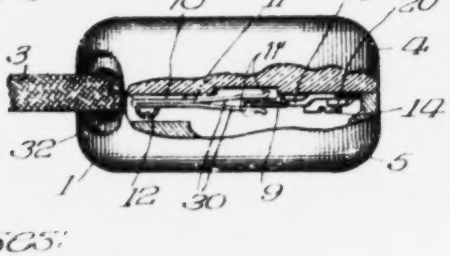
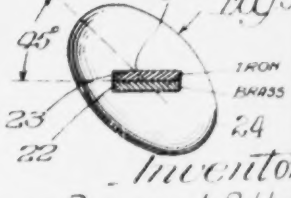


Fig. 5



Witnesses:
A. E. Barrett
Fred M. Dawson

Inventor:
Raymond R. Haugh
By. Rummler & Rummler
Attys.

Patented Dec. 1, 1925. 1,563,854

395

UNITED STATES PATENT OFFICE.

RAYMOND R. HAUGH, OF CHICAGO, ILLINOIS.

ELECTRIC SWITCH

Application filed April 17, 1922. Serial No. 553,854.

o all whom it may concern:

Be it known that I, RAYMOND R. HAUGH, citizen of the United States of America, nd a resident of Chicago, county of Cook, nd State of Illinois, have invented a new nd useful Improvement in Electric witches, of which the following is a speci- ation.

This invention pertains to improvements thermostatic switches similar in general aracter and purpose to the one described my Patent No. 1,387,980, of August 16, 21, and also to the arrangement of the rd and connections therefor in such a itch. These switches are intended for the ntrol of electric circuits as applied to elec- ically heated implements, as for instance, t-irons and cookers or the like, overheat- g of which might be injurious to the im- ements themselves or to the materials or jects with which they may be associated use.

The main objects of the invention are to ovide a simple automatic switch of im- oved construction and operation to break electric circuit when the temperature of switch reaches a predetermined tem- rature; to provide a manually operated itch of this sort which will have a snap en action and also a quick closure action as not to burn the contact points as usu- y results from slow opening and closing; provide the switch with lock closed and k open devices so as to prevent accidental eration and possible consequent damage; d to provide a switch plug device of the aracter having the supply cord better po- ioned to avoid injury and confusion in .

An illustrative embodiment of this in- tion is shown in the accompanying draw- s, in which—

Figure 1 is a plan of an electric flat-iron ing a plug switch attachment embody- the invention hereinafter described.

Fig. 2 is an end elevation of the device of ure 1 as viewed from the right.

Fig. 3 is an enlarged inside face plan of lower member of the two-part plug.

Fig. 4 is a top end view of the plug with art of the casing walls broken away, with the plug shown with the normally ard face disposed downward.

Fig. 5 is a greatly enlarged cross section the line 5—5 of Fig. 3, and shows the composite structure of the thermostatic blade, and the angular position of the han- dle thereon.

In the construction shown in the draw- ings, the switch plug 1, which may be formed and adapted for attaching to any one of a number of different current con- suming devices, is here shown attached to a flat-iron 2, having a handle 2'. The mem- ber 1 is provided with a current supply cord 3 protruding from one side near the top.

The plug 1 includes a sectional shell or casing in which the switch parts are mount- ed, said casing consisting of a lower base part 4, and a removable top or cover mem- ber 5 held in place by a pair of screws 1' substantially as customary in such devices.

The circuit extending through the plug 1 includes a pair of terminals 6 and 7, of spring-walled tubular construction adapted to provide good electrical connection with the corresponding contacts, partly shown at 2'' on Fig. 1. There is a plate 8 rigidly mounted on said member 4, for supporting a movable switch blade 9. Another plate 10 is also attached rigidly to member 4 to support the spring contact member 11, which is fastened to plate 10 by screws 12. The plate 10 is set in a slight depression formed to receive said plate in the member 4, and is secured in place by a screw 13, which may serve also to attach one of the conductors of cord 3.

The plate 8 is fastened in place by a pair of screws 14 and 15. The switch blade 9 is oscillatably mounted on a pivot pin 16 set in the plate 8, and is urged toward its open position by a spring 17, one end of which engages the middle part of said blade, and the other end is set in a shoulder 18 turned up on plate 10. The plate 10 is provided with a square shoulder 19 struck up in a po- sition to retain the blade 9 in its closed po- sition. Another shoulder 20 is struck up on plate 8 back of shoulder 19 to serve as a stop for the blade when it snaps open. Medially disposed between the shoulders 19 and 20 is an oppositely facing inclined shoul- der 21, which, though serving to oppose closing the switch is readily overcome by application of a moderate degree of force on the part of the user, as a result of which the blade will snap forward into place in a manner corresponding approximately with the snap open action.

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In order that the switch may snap open automatically at a predetermined temperature, the blade 9 is of composite structure, and includes a pair of thin flat strips brazed together, said strips having different coefficience of linear expansion, brass being used on the inner strip 22, and iron for the outer strip 23. A convenient handle 24 is attached to the projecting outer end of the blade, which handle is of oblong shape and disposed at an angle of about forty-five degrees (45°) to facilitate and insure proper application of force for manually opening and closing, and especially to insure applying the closure force in a direction to cause a quick snap-like action.

Referring now to the cord 3, one of the conductors 25 is connected directly to the plate 10, and the other conductor 26 is connected directly to terminal 6 by means of a screw 27. The other terminal 7 is connected to the plate 8 by means of a spring connector strip 28 secured at one end by a screw 15, and at its other end by screw 29. It is to be noted that the spring clip 11 comprises a pair of arms 30 which may be formed integrally, adapted to embracingly receive the blade 9 as shown in Fig. 4. It is to be understood that plug members 4 and 5 are of insulating material, as, for instance, hard rubber, and that one of said members is formed with a notch 31 to provide for movement of blade 9. An inlet aperture 32 is also provided for the cord 3.

The spring contact or terminal 11 is made of thin flat sheet metal of resilient character, and is adapted to yield for movement transversely of the plane of pivotal movement of the blade 9 to accommodate the necessary thermostatic warping of the latter as it bends upward to release from shoulder 19. Moreover, this member 11 is formed with its outer tip 11' turned upwardly somewhat so as to provide a relatively wide mouth to receive the end ring edge of the blade 9 in closing.

It is to be noted that when the plug is in place on the implement 2, whatever jars may occur as by setting the iron down quickly or by tilting it backward to stand on end, will tend to urge or throw the switch blade 9 downward toward the casing member 4 the more tightly into place behind the shoulder 19. It is also to be noted that the angular position of the handle 24 is such that normal pressure against the side thereof, as indicated by the arrows on Figures 1 and 5, will at first fail to overcome the resistance of the inclined shoulder 21, but as soon as greater pressure is applied and inclined a little more toward the ultimate direction of movement of the blade, it will suddenly slip over to its closed position with a snap like action substantially like that provided for by the spring 17 in opening the switch.

Although but one specific embodiment of this invention has been herein shown and described it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. An electric switch provided with a thin laminated thermostatic blade, means for normally urging said blade edgewise to its open position, means for holding said blade in closed position, and means for manually operating said blade, said blade being adapted and arranged to open at a predetermined temperature by warping sidewise to avoid said holding means.

2. An electric switch having a thermostatic blade, a detent for holding said blade in closed position, manually operated means to release said blade from said detent, said blade being formed and arranged to release itself by warping from said detent at a predetermined temperature, rigid means for holding said blade in open position and manually operated means for closing said switch against the said holding means.

3. An electric switch device comprising a frame part having an aperture containing a stop and a pair of contact members, one of which is in the form of a thin composite laminated blade of unitary character pivotally mounted at one end and provided with a handle adapted for swinging manually edgewise into and out of engagement with said stop and with the other said contact, the blade member being formed of thermostatic material adapted for sidewise warping for automatic release from said stop at a predetermined temperature.

4. A thermostatic switch comprising a base part and a pair of contact members one of which is blade-like and pivotally mounted on said base part for swinging by manual operation into and out of engagement with the other contact member also mounted on said base part, said base part having rigid therewith a shoulder spaced from the switch pivot and in the normal path of movement of said blade and disposed to normally hold the switch closed said blade being resilient so that it may be sprung manually clear of said shoulder and also being of thermostatic material so as to be warped clear of said shoulder by increase in temperature.

5. A biased thermostatic switch of the character described having a resilient blade and a pair of positive stops in the normal path of said blade, one to limit its degree of opening and the other to squarely resist its opening, and also an inclined stop to preciably oppose closure of said blade, said blade being formed and adapted for normal edgewise movement to open and close,

being transversely yielding and responsive to warping either thermostatically or manually, said blade having an inclined handle to insure proper manual operation.

6. A thermostatic switch comprising a base part and a pair of contact members, one of which is blade-like and pivotally mounted on said base part for swinging manually edgewise into and out of engagement with the other contact member which is also mounted on said base part, said base part having rigidly mounted thereon a shoulder spaced from the switch pivot and in the normal path of movement of the blade and disposed to normally hold the switch closed, said blade being resilient so that it may be sprung manually sidewise clear of said shoulder and also being of thermostatic material so as to be warped clear of said shoulder by increase in temperature, said blade having a flattish handle set at an angle to the plane of said blade.

7. In a biased switch a stop in combination with a laminated blade constructed to warp thermostatically transversely to its opening and closing movement to pass said stop.

8. A switch including a pair of terminals, a thermostatic blade pivoted to one of said terminals and arranged to swing into and out of engagement with the other said terminal, said blade being constructed to warp crosswise of its pivotal movement responsive to temperature change, and said other terminal being resilient and yielding in the same direction to accommodate such warping when the switch is closed.

Signed at Chicago this 13th day of April, 1922.

RAYMOND R. HAUGH.

Dec. 15, 1925. 1,565,499

400

T. A. REID

SAFETY SWITCH FOR ELECTRIC IRONS

Filed Dec. 7, 1921

Fig. 1.

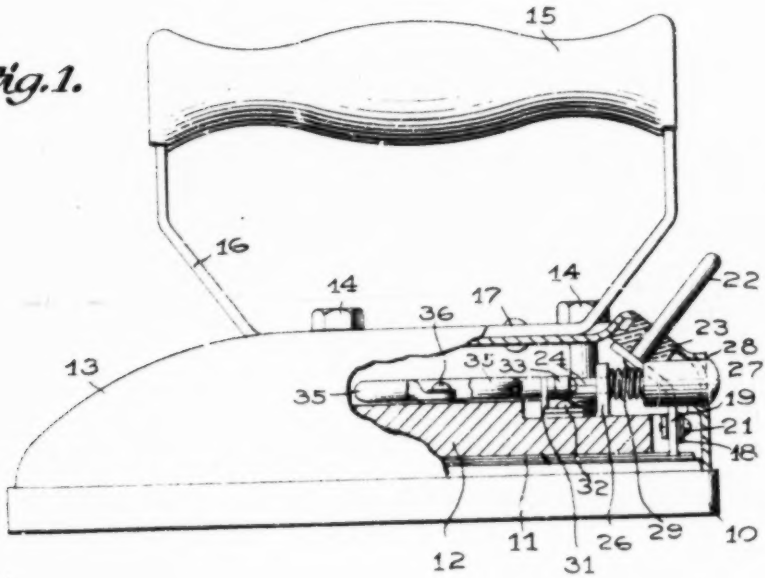
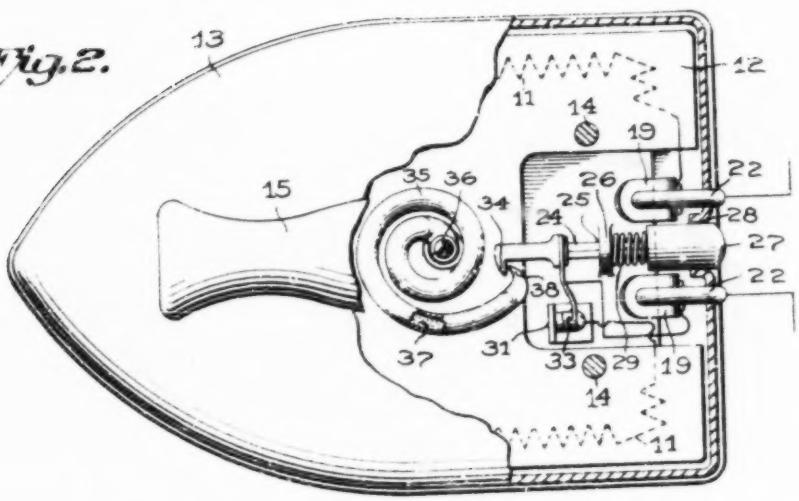


Fig. 2.



WITNESSES:

R. S. Harrison

N M Biebel

INVENTOR

Thomas A. Reid

BY

Wesley Gibson

ATTORNEY

Patented Dec. 15, 1925. 401 1,565,499

UNITED STATES PATENT OFFICE.

THOMAS A. REID, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

SAFETY SWITCH FOR ELECTRIC IRONS.

Application filed December 7, 1921. Serial No. 520,605.

To all whom it may concern:

Be it known that I, THOMAS A. REID, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Safety Switches for Electric Irons, of which the following is a specification.

My invention relates to electrically heated apparatus and particularly to electrically heated flat irons, and it has for its object to provide a relatively simple, inexpensive, and easily manufactured temperature-limiting device for an electrically heated flat iron.

It is highly desirable to provide an electrically heated flat iron with means for interrupting the circuit through the heating element of the iron in case the iron is left unattended with current traversing the heating element, in order to prevent undue rise of temperature and the resultant possibility of causing a fire.

My invention embodies a closed tubular member of substantially spiral form secured to the body portion of the iron and operating as a locking means for a manually closable switch also mounted on the body portion of the iron. The tubular member is filled with a material which fuses at a predetermined temperature, causing a movement of the free end of the tubular member whereby the switch is released and moved to its open position by a spring member. The switch is manually closable from the outside of the iron, the handle of the switch serving to indicate whether the switch is in its open or in its closed position.

In the single sheet of drawings,

Figure 1 is a view, in side elevation, of an electrically heated iron comprising the device embodying my invention, certain portions being cut away and others being shown in longitudinal section;

Fig. 2 is a top plan view of an electric iron, portions being cut away to show the switch mechanism.

An electric iron comprises a bottom plate 10, an electric heating element 11 and a top plate 12, the three members constituting what may be termed the body portion of the iron. A cover member 13 is held in operative engagement with the body portion of the iron by a plurality of bolts 14. A handle member 15 is provided with a handle strap 16 of substantially U-shape, the intermediate portion of which is secured against the cover member by one of the bolts 14 and by a rivet 17.

The heating element 11 may be of any desired type of construction usually employed in the art and is, therefore, not further described in detail. The ends of the resistor of the heating element are provided with terminal members 18 which are suitably secured against the lower end of terminal strap members 19 by means of screws 21. The terminal straps 19 are of substantially L-shape and are provided, at their upper ends, with contact-terminal studs 22 suitably secured thereagainst. The studs 22 project through a suitable opening at the rear of the cover member 13, an insulating member 23 being provided to maintain the studs 22 and the terminal straps 19 in proper operative positions relatively to each other and to the cover member.

A switch mechanism for closing and for interrupting the circuit through the resistor of the heating element comprises a rod 24 extending longitudinally of the iron and moving in an opening 25 in a lug 26 provided on, or secured to, the top member 12 near the rear end thereof. A push rod 27 is securely mounted on the outer end of the rod 24 and extends through an opening 28 in the rear of the cover member to permit of the operator pressing thereagainst to close the switch. A coil spring 29 is located on the rod 24 between the upstanding lug 26 and the push rod 27 and is effective to resiliently bias the switch to its open position with a greater portion of the length of the push rod 27 projecting through the opening 28. The switch proper comprises a substantially stationary contact member 31 which is mounted on, but insulated from, the top plate, by means of a bolt 32, and a relatively movable contact 33 which is mounted on the rod 24. The inner end of the rod 24 is provided with a hook 34 for a purpose to be hereinafter set forth in detail.

A locking means, under the thermal control of the iron, comprises a closed tube 35 of substantially spiral form, the end of which is secured against the top plate 12 by means of a bolt 36. The tube 35 is filled with a suitable material 37 such as lead or antimony, lead alloy, or fusible salts, such

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as potassium chlorate, and by its subsequent expansion causes the tube to partly uncoil. The free end of the tube is formed into a hook 38 which is located in the path of travel of the hook 34 on the rod of the switch as long as the temperature of the body portion of the iron is below a predetermined value. In case the temperature of the body portion of the iron exceeds a predetermined value the material within the tube fuses and expands, thereby causing the hook 38 of the coil to move away from the hook 34 of the switch rod, thus permitting the coil spring 29 to quickly interrupt the circuit through the heating element of the iron.

The mechanism is effective to permit the operator to close the switch but is ineffective to retain the switch in its closed position when the temperature exceeds said predetermined value, and the temperature must drop materially below the predetermined value before the mechanism is again effective to lock the switch in its closed position. The tube hereinbefore described as constituting the thermally controlled locking member is, in general, the same as the ordinary Bourdon tube but is filled with a material which expands upon fusion at a temperature which coincides substantially with the temperature to which it is desired to limit the body portion of the iron.

The device embodying my invention thus provides a relatively simple, inexpensive temperature-limiting and circuit interrupting device for an electrically heated iron in which is incorporated means for indicating whether the switch is in its open or its closed position.

I claim as my invention:—

1. A temperature-limiting means for an electrically heated device comprising a switch mounted on the body portion of said heated device, means manually actuated from the outside of a cover member of said heated device for moving said switch to its closed position, and thermally controlled means, comprising a closed tube filled with a fusible material and having one end rigidly mounted on the body portion of said heated device, for holding said switch in its closed position and for permitting said switch to open upon the occurrence of a predetermined tempeature in the body portion.

2. A temperature-limiting means for an electrically heated device comprising a switch mounted on the body portion of said heated device and spring-biased to its open position, means manually actuated from the outside of a cover member of said heated device for moving said switch to its closed position, a sealed tubular member, of spiral-coil form, for normally holding said switch in its closed position, and material in said tube fusible at a predetermined temperature and effective thereby to cause a turning movement of said tube to release said switch.

3. A temperature-limiting means for an electrically heated device comprising a switch mounted on a body portion of said heated device and spring-biased to its open position, means manually actuated from the outside of a cover of said heated device for moving said switch to its closed position, a sealed tubular member, of spiral-coil form, having one end rigidly secured to the body portion and having its entire length in heat-receiving relation thereto, for normally holding said switch in its closed position, and means in said tubular member that fuses at a predetermined temperature and causes a turning movement of said tubular member whereby said switch is released.

4. A temperature-limiting means for an electrically heated device comprising a switch mounted on a body portion of said heated device, resilient means for biasing said switch to its open position, means manually actuated from the outside of a cover member of said device for moving said switch to its closed position, and resilient means mounted on the body portion for normally holding said switch in its closed position, said means comprising a sealed tube of spiral form, and a material in said tube fusible at a predetermined temperature and operative thereby to cause said tube to release said switch.

5. A temperature limiting means for an electrically heated device comprising a switch spring-biased to its open position, means manually actuated from the outside of a cover member of the heated device for moving said switch to its closed position, and means comprising a sealed tube and a fusible material therein, under the thermal control of the body portion of said device, for normally locking said switch in its closed position and for permitting said switch to open upon the occurrence of a predetermined temperature in the body portion.

In testimony whereof, I have hereunto subscribed my name this 25th day of November, 1921.

THOMAS A. REID.

Jan. 11, 1927. E. AICHELE 1,614,169

ELECTRICAL CIRCUIT BREAKER OR INTERRUPTER

404 Filed Feb. 24 1925 2 Sheets-Sheet 1

Fig. 2

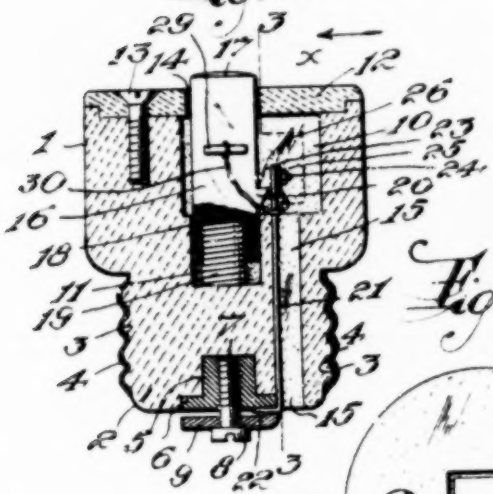


Fig. 3

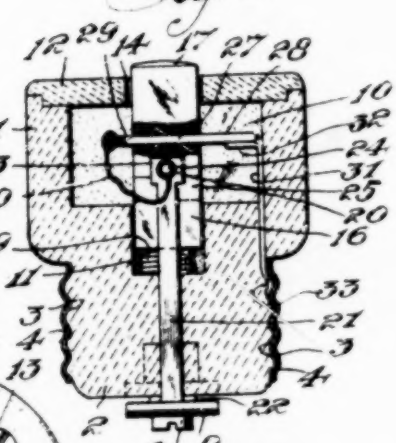


Fig. 1

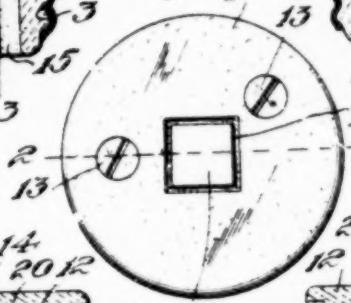


Fig. 4

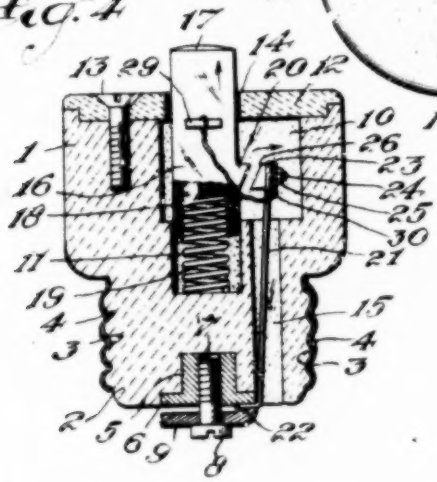


Fig. 5

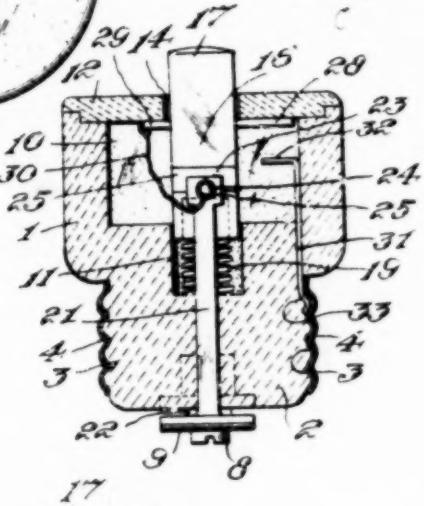


Fig. 6

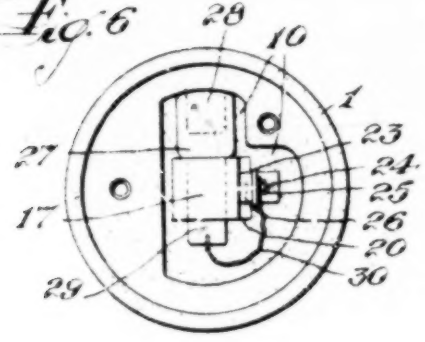
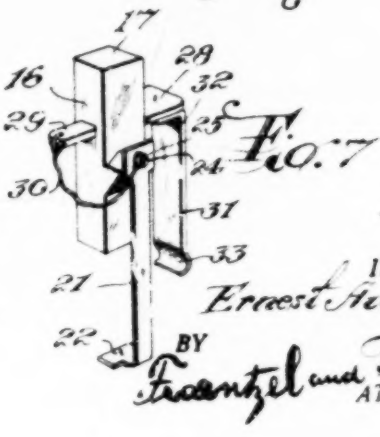


Fig. 7



INVENTOR
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1,614,169

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ELECTRICAL CIRCUIT BREAKER OR INTERRUPTER

Filed Feb. 24 1925 2 Sheets-Sheet 2

Fig. 8

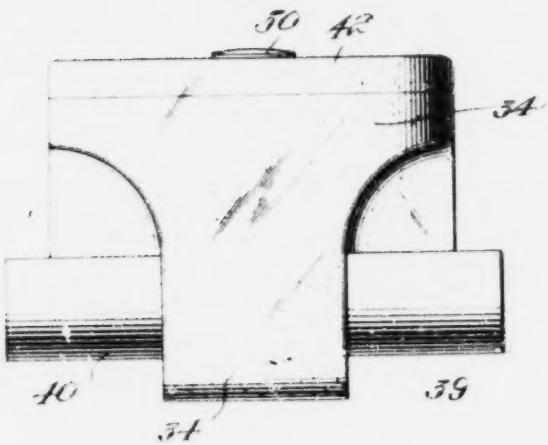

Fig. 9

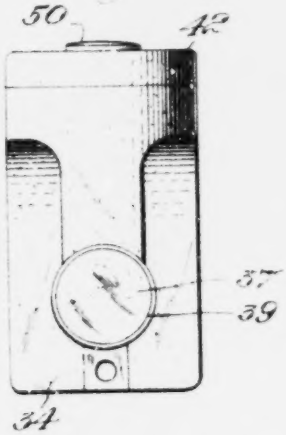

Fig. 10

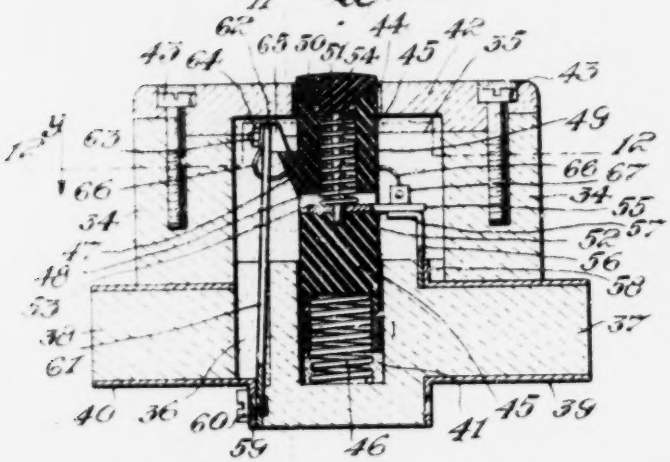

Fig. 11

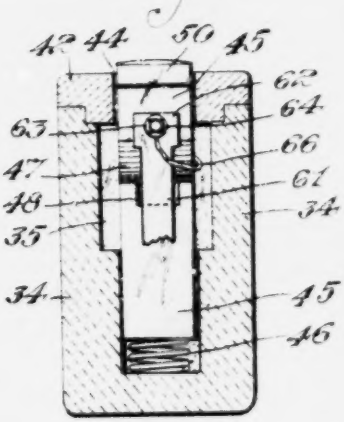

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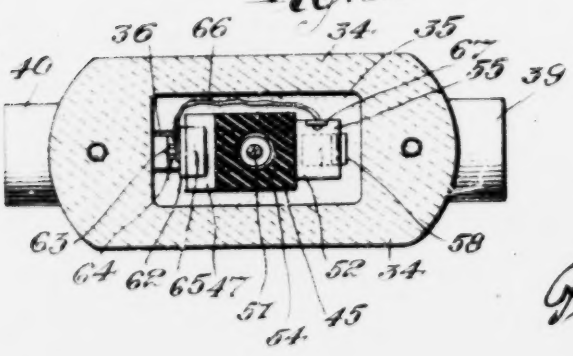
Fig. 12



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Patented Jan. 11, 1927. 1,614,169

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UNITED STATES PATENT OFFICE.

ERNEST AICHELE, OF IRVINGTON, NEW JERSEY.

ELECTRICAL CIRCUIT BREAKER OR INTERRUPTER.

Application filed February 24, 1925. Serial No. 11,128.

This invention relates, generally, to improvements in repeating electrical circuit-interrupters; and, the present invention has reference, more particularly, to a novel construction of circuit-interrupter, made in either plug or cartridge-form, respectively, adapted to connection in the ordinary sockets or clips, to provide, primarily, a safe-guard against injurious effects of abnormal overloads and short circuits.

The present invention, therefore, has for its principal object to provide a novel, reliable, and simply constructed, as well as an automatically operating circuit-breaker or interrupter, which is especially adapted for use with the usual screw-threaded receiving sockets of a switch-board, or a meter-board, or the like; or, in slightly modified cartridge-form with the usual receiving clips, for interrupting an electric circuit in case of an overload or a short circuit, the general construction of the contact-elements of the device being such that the device can be used over and over, without deteriorating effect to either the device or to the installation in which the device is located.

In addition to the above-mentioned objects, however, the invention has for its further object to provide in connection with the automatically operating interrupter-mechanism of the device, auxiliary interrupter-means which will act to interrupt or break the electrical circuit in which the device is placed, if for some unexpected reason the interrupter-mechanism should stick, or if some part thereof should become inoperative, so that the device will effectively serve the purposes for which it is intended.

Other objects of the present invention not at this time more particularly enumerated will be clearly understood from the following detailed description of the said invention.

With the various objects of the present invention in view, the said invention consists, primarily, in the novel electrical circuit-breaker or interrupter hereinafter set forth; and, the said invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the said parts, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claims, which are appended to and which form an essential part of the said specification.

The invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a top-end view of a circuit-interrupter of the plug-form: Figure 2 is a transverse vertical section of the same, said section being taken on line 2—2 in said Figure 1; and Figure 3 is a similar section, taken on line 3—3 in said Figure 2, looking in the direction of the arrow x, said views illustrating one embodiment of the principles of the present invention, and said Figures 2 and 3, showing the contact-making elements of the interrupter-mechanism in their initial positions, when a complete electrical circuit is being established through the device.

Figures 4 and 5 are transverse sectional representations of the device, similar to Figures 2 and 3, respectively, showing the several contact-making elements of the interrupter-mechanism in their automatically separated relation, caused by an overload or short circuit in the main line.

Figure 6 is a top-end view of the circuit-interrupter, with the end-cover or closure of the device omitted from said view; and Figure 7 is a perspective view of the transmitter-mechanism removed from the screw-threaded plug-form of circuit-interrupter.

Figure 8 is a side elevation, and Figure 9 an end-elevation, of a circuit-interrupter embodying the principles of the present invention, made in the general cartridge-form; Figure 10 is a longitudinal vertical sectional representation of the same, showing the several contact-making elements of the interrupter-mechanism in their initial positions, when a complete electrical circuit is being established through the device; Figure 11 is a transverse vertical section of the same, said section being taken on line [illegible] in said Figure 10; and Figure 12 is a horizontal section of the device, said section being taken on line 12—12 in said Figure 10, looking in the direction of the arrow y.

Similar characters are employed in all of the said herein-above described views, to indicate corresponding parts.

Referring now more particularly to Figures 1 to 7 of the drawings, the reference character 1 indicates a main body in which the interrupter-mechanism is arranged, the body in this case being of the plug form or

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type and being made of a suitable insulating material, such as bakelite, porcelain, or other suitable insulating material. Upon its lower portion, the said body is made with a reduced part 2, which is externally convoluted or screw-threaded, as at 3, for the reception and arrangement thereon of a correspondingly convoluted or screw-threaded collar or ring 4 made of suitable metal, as brass, for screwing into the usual internally screw-threaded receiving socket of a meter or switch-board, or the like. The lower portion of said reduced part 2 is also socketed, as at 5, for suitable arrangement therein of a metal thimble or nut 6, which is internally screw-threaded, as at 7, for reception of a contact-screw 8, and upon which screw is also placed a metal plate or disc 9. In its upper part, the said body 1 is suitably chambered, as at 10, and in communication with said chamber, and extending downwardly in said body is a socketed part 11, usually of a rectangular or square cross-sectional configuration. Suitably mounted upon the upper end-surface of said body 1 is a suitably formed cover or closure 12, also made of a suitable insulating material, said cover being secured in closing position upon said body by an arrangement of screws 13,, or other suitable fastening means. The said cover or closure 12 is also made with an opening 14, in alinement with and conforming in shape to the cross-sectional configuration of the previously-mentioned socketed part 11. Leading from the chamber 10 of the body 1, and extending downwardly through the reduced part 2 of said body, is a suitably shaped duct 15. The interrupter-mechanism arranged within the said body 1, in the manner to be presently described, and which as will be evident is an automatically operating mechanical switch, consists, essentially, of a suitably shaped manipulating stem or plug, as 16, which extends across the chamber 10, and has its upper end-portion 17 extending into the opening 14, and normally slightly above the outer face of the cover or closure 12, substantially as illustrated in Figures 2 and 3 of the drawings. The lower end-portion of the said stem or plug 16, which is also preferably socketed, as at 18, extends into the socket-part 11, said lower end-portion of the stem or plug 16, resting upon the upper end of a coil-spring 19, arranged in said socketed parts 11 and 18, as indicated in Figures 2, 3, 4 and 5 of the drawings. Upon its one side, the said stem or plug 16 is provided with a suitably formed projection 20, providing a stop-member, said projection extending laterally into the chamber 10, at a point directly above and substantially in alinement with the previously mentioned duct 15. Suitably secured by means of solder, or otherwise, to said metal plate or disc 9 is an angular end-portion 22 of a resilient or spring-arm 21, made of a thermo-static metal, which extends in an upward direction into and through the duct 15, with the upper end-portion 23 thereof projecting into the chamber 10. Suitably secured to said end-portion 23 by means of a screw-stud 24 and a nut 25, or in any other suitable manner, is a projection which acts as a holding or retaining member, when brought into engagement with the stop-member 20 of the stem or plug 16. Imbedded in the said stem or plug 16 with its end-portions 28 and 29 projecting on opposite sides of the stem or plug 16 is a metal plate or bar 27, the end-portion 29 of which is connected by means of a lead-wire 30 with the upper end-portion of the resilient or spring-arm 21. Under normal conditions, the opposite end-portion 28 of the said plate or bar 27 is in contact with a member 32 of another metal bar or plate 31 which extends from the chamber 10, into the body 1 and part of the reduced part 2 in which it is imbedded and has its end-portion 33 in electrical contact with a portion of the metal collar or ring 4, as represented in Figures 3 and 5 of the drawings.

Having in the foregoing described the general construction and arrangement of the several devices and parts of the circuit-breaker or interrupter of the screw-plug form, I will now briefly set forth its use in connection with the usual receiving sockets of a meter or switch-board, and its for breaking an electric circuit when there is an overload or a short circuit.

Direction of the electric circuit through the circuit-breaker or interrupter, when screwed in the socket, and when the various members of the interrupter-mechanism have been set in the positions indicated in Figures 2 and 3, by pushing the stem or plug 16 in an inward direction, is through the screw, the plate or disc 9, to the end-portion 22 of the thermostatic arm 21, thence by means of the lead-wire 30 to the plate or bar 27, thence by the contact-member 32 of the plate or bar 31, and by means of its end 33 to the metal collar or ring 4, thus completing the electric circuit with the socket into which the device has been screwed. Thus, when the various parts of the device are in the set positions indicated in said Figures 2 and 3 of the drawings, a complete electric circuit is established. At the moment, however, as an overload or short circuit occurs in the main line, the abnormal current will cause the thermostatic arm 21 to move longitudinally within the duct 15, thereby automatically causing the disengagement or separation of the two members 26 and 20, as indicated in Figure 4. The compressed spring 19 now becomes active, causing the stem or plug 16 to fly in an outward

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tion, and thereby breaking the electric circuit, due to the separation of the members 32 and 28 of the respective plates, or bars 31 and 27, as clearly shown in Figure 5 of the drawings. The outward movement of the stem or plug 16 is arrested by contact of the end-portions 28 and 29 of the plate or bar 27 with the under surface of the cover or closures 12 of the device, without destroying the usefulness of the circuit-breaker or interrupter, the parts of which can again be set by the proper manipulation of the setting stem or plug 16, as will be evident.

It will thus be understood that the device is readily applicable to meter or switchboards, and to any other electrical instrumentalities, in lieu of the usual and readily destructible fuse-plugs at present in ordinary use, and that the device when inserted in the line can be used over and over.

As a precaution, in case of any inoperativeness of the movable parts of the interrupter-mechanism, due to sticking, or due to a weight caused by a foreign object carelessly placed upon, or leaning against the end-portion 17 of the said stem or plug 16, which would prevent movement of the same, and hence separation of the contact-members 32 and 28, so that the electrical circuit would not be interrupted, it may be desirable to make the lead-wire 30 of a fusible metal, which will readily melt away when there is an overload or short-circuit, as will be evident, this metal, however, of which the lead-wire is made being of such consistency that it will not fuse as long as the movable parts of the interrupter-mechanism are operative to break the electrical circuit when there is an overload or a short-circuit.

Referring now to Figures 8 to 12 of the drawings, I have shown in said figures a circuit-breaker or interrupter embodying the principles of the present invention, but in which the device is made in cartridge-form to be used with the usual spring-clips for inserting the device in a main electrical line.

In said figures, the reference-character 34 indicates a block-like or rectangular main body of any suitable insulating material, which is chambered, as at 35, and is also formed with a communicating duct, as 36. Extending from the ends of said body are cylindrical, or other suitably shaped extensions 37 and 38, which are respectively entered in the tubular contact-making shells 39 and 40, the main portions of said shells being embodied in the said main body 34 by being imbedded therein, during the molding process. The lower portion of the said main body 34 is also provided with a receiving socket 41 and its upper open portion is closed by a cover 42, suitably secured to said body by means of screws 43, or other suitable fastening means. This cover 42 is provided with an opening 44 corresponding to and in alinement with the previously-mentioned socket 41. Movably disposed in said socket 41 is the lower portion of a stem or plug 45 made of insulating material, said plug resting upon a coiled spring 46, within said socket 41, substantially as represented in Figures 10 and 11 of the drawings. At its one side, the said stem or plug 45 is made with a projection 47 providing a stop, and in suitable location, the said plug is also made with a laterally extending opening 48. Extending in an upward direction from said opening 48, through the upper central portion of said plug is a duct 49, the upper end of which is closed by means of a suitably shaped member 50, which provides a finger or push-piece for said plug 45, as will be evident from an inspection of Figure 10 of the drawings. Extending in a downward direction from said finger or push-piece centrally through the duct 49 and across the opening 48, is a rod or stem 51.

Disposed within said opening 48, and having its perforated end-portion 53 loosely mounted upon said rod or stem 51, is a metallic contact-making plate 52. Encircling said rod or stem 51, between said plate 52 and the finger or push-piece 50, is a coiled spring 54, the purpose of which is to normally force the projecting end-portion 55 of the plate 52 into electrical contact with the member 57 of a metallic conductor 56 which, in turn, has its lower end-portion united with a part 58 of the previously mentioned contact-making shell 39. Suitably connected with a portion 59 of the contact-making shell 40, by means of a screw 60, or in any other suitable manner, is a resilient or spring-arm 61, made of a thermostatic metal which extends in an upward direction into and through the duct 36, with the upper end-portion 62 thereof terminating in the chamber 35. Suitably secured to said end-portion 62 by means of a screw-stud 63 and a nut 64, or in any other suitable manner, is a projection 65 which acts as a holding or retaining member, when brought into engagement with the stop-member 47 of the stem or plug 45. The upper end-portion of said resilient or spring-arm 61 is also suitably connected, by means of a lead-wire 66 with the end-portion 55 of the contact-making plate 52, preferably by means of a member 67 of said plate, substantially as shown in Figures 10 and 12 of the drawings.

Direction of the electric circuit through this form of circuit-breaker or interrupter, when secured by means of the contact-making shells 39 and 40, between the usual spring contact-clips, and when the members of the interrupter-mechanism have been set in the positions indicated in said Figure 10, by pushing the stem or plug 45 in a downward direction, is through the shell 40, the

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screw 60, to the end-portion 62 of the thermostatic arm 61, thence by means of the lead-wire 66 to the member 67 of the plate or bar 52, thence by the contact-member 57 of the conductor 56, and the said conductor, completing the electric-circuit with the shell 39, and by means of the latter with the contact-clips, between which said shell 39 has been sprung. As soon, however, as an overload or short circuit occurs in the main line, the abnormal current will cause the thermostatic arm 61 to move laterally within the duct 36, thereby automatically causing the disengagement or separation of the two members 65 and 47. Immediately the compressed spring 46 becomes active, causing the stem or plug 45 to fly in an outward direction, and thereby separating the end-portion 55 of the plate 52 from contact with the member 57 of the conductor 56, thus interrupting the circuit, as will be evident.

For the same reasons as heretofore stated in connection with the device described and illustrated in Figures 1 to 7 of the drawings, the lead-wire 66 in this case may be made of a fusible metal.

I am fully aware, that changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction of the said parts, without departing from the scope of the present invention as set forth in the foregoing specification, and as defined in the clauses of the claims which are appended to the said specification. Hence, I do not limit my present invention to the exact arrangements and combinations of the several devices and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

I claim:—

1. A repeating circuit-breaker comprising a main body of insulating material having exterior contacts mounted thereon, an internal fixed contact, a longitudinally movable spring-released push-plug, said plug being provided with a laterally extending opening, a contact-establishing element disposed within said opening and having portions extending beyond the opposite sides of said plug, one end-portion of which is engageable with said fixed contact, a thermostatic control-arm within said body, a detent-means between said arm and the plug for holding said plug in its depressed position within said main body to produce electrical engagement between said contact-establishing element and said fixed contact and electrical conducting means between said control-arm and the oppositely extending end-portion of the contact-establishing element.

2. A circuit-breaker comprising a body of insulating material provided with a screw-portion and a metal screw-collar thereon for screwing the device into a receiving socket, said body being formed with a duct, combined with a circuit-closing mechanism within said body, consisting of a spring-controlled push-plug provided with a laterally extending opening, a stop-member connected with said plug, a spring-controlled thermostatic control-arm movably disposed within said duct and provided with means engageable with said stop-means for maintaining the push-plug in its depressed position, a fixed electrical contact within said body, a contact-establishing element disposed within the opening of said push-plug and having end-portions extending from the opposite sides of said push-plug, one end-portion of which is engageable with said fixed electrical contact, and a lead-wire between said control-arm and the oppositely extending end-portion of said contact-establishing element.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 20th day of February, 1925.

ERNEST AICHELE

May 31, 1927.

412

M. J. SANDIN

1,630,358

CUT-OUT

Filed April 1, 1922

Fig. 1

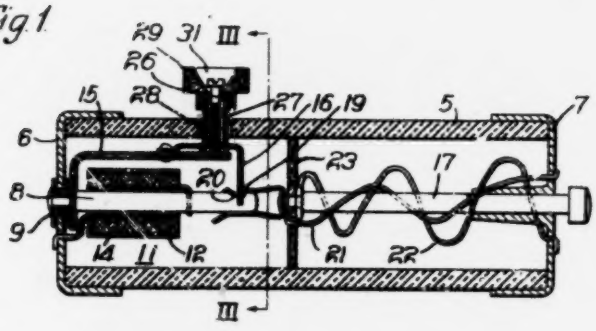


Fig. 2

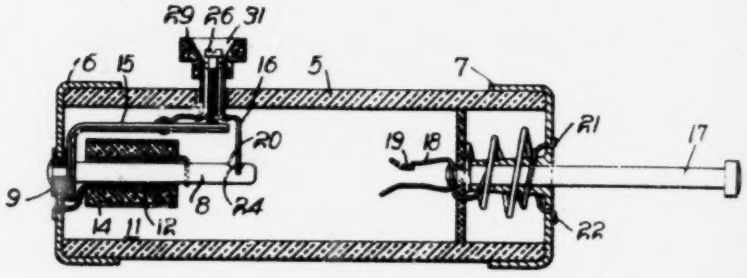


Fig. 3

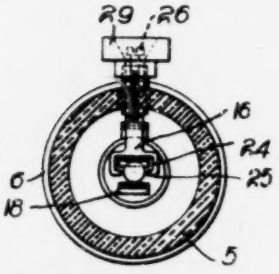


Fig. 5

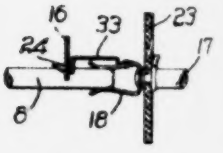
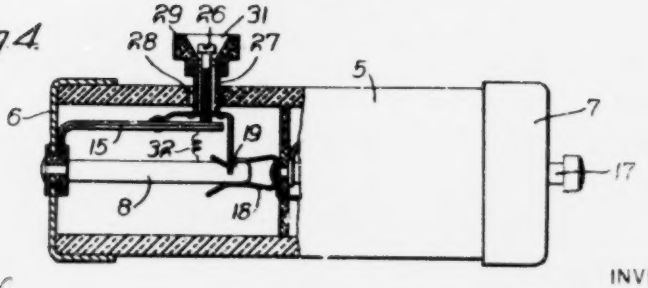


Fig. 4



WITNESSES:

H B Funk

J. H. Wendig.

INVENTOR

Maurits J Sandin

BY

Wesley Glass

ATTORNEY

Patented May 31, 1927. 413 1,630,358

UNITED STATES PATENT OFFICE.

MAURITS J. SANDIN, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

CUT-OUT.

Application filed April 1, 1922. Serial No. 548,659. REISSUED

My invention relates to cut-out mechanism and particularly to thermal-responsive circuit-interrupting mechanism for protecting electric apparatus from excessive current.

One object of my invention is to provide a cut-out mechanism that may be reset repeatedly and that may be installed in a casing or receptacle similar in shape and dimensions to a standard cartridge fuse of equal capacity and which may be mounted in standard fuse clips or jaws and substituted for standard fuses.

Another object of my invention is to provide a cut-out device, having the above characteristics, that will open the circuit under predetermined overload conditions and within a predetermined time and wherein means are provided for so regulating the thermal-responsive element thereof that it will respond to different predetermined current conditions.

Another object of my invention is to provide a thermal cut-out that may be manually closed or reset, or manually released or opened, and which is responsive to predetermined current conditions.

Another object of my invention is to provide a cut-out device wherein a barrier is interposed between one of the contact members of the conductors and the actuating mechanism therefor for preventing damage to the latter when the circuit is interrupted.

Another object of my invention is to provide a cut-out mechanism that is simple and inexpensive to manufacture.

These and other objects, that will be made apparent throughout the further description of my invention, are attained by means of the apparatus hereinafter described, and illustrated in the accompanying drawings, wherein:

Figure 1 is a longitudinal section through a cut-out or switch mechanism embodying features of my invention;

Fig. 2 is a view similar to Fig. 1, showing certain elements in inoperative position;

Fig. 3 is a transverse sectional view taken on the line III—III of Fig. 1,

Fig. 4 is a fragmentary longitudinal sectional view of a modified form of cut-out construction, and

Fig. 5 is a view of a portion of a modified form of latch mechanism.

Referring to the drawings, the cut-out mechanism includes a tubular insulating casing 5 having end ferrules 6 and 7 substantially closing the end of the tube or casing. The insulating tube and the ferrules are similar in shape and dimensions to those of cartridge fuses having an equal capacity and, therefore, the casing is adapted to be inserted in standard fuse clips and jaws, it being the purpose of the device, in some cases, to take the place of standard fuses, the advantage of the device over the standard fuse being that, after the circuit is interrupted, due to either overload or short-circuit conditions in the circuit, it may be repeatedly reset without requiring replacement of any parts thereof.

A conducting rod or contact member 8 is attached to the ferrule 6 and is insulated therefrom by means of insulating washers 9. A heating element 11, comprising a heating coil 12, surrounds the contact member 8 and is supported thereby. The heating element, comprising a heating coil, preferably made of a high-resistance metal, is embedded in a tubular sheath of heat-absorbing insulating-material that is enclosed within the metal sleeve 14. One end of the coil 12 is conductively attached to the ferrule 6 and the other end is conductively connected to the rod 8, as indicated in Fig. 1.

A bimetallic thermal-responsive element 15 is mounted upon the conductor 8 and comprises two metal strips that are welded together and have different coefficients of expansion. Variations of the temperature of the bimetallic element cause the free end thereof to be moved toward the walls of the casing 5. The element is placed in close proximity to the heating element 11 and, when heated, serves to move a latch member 16 away from the contact member 8.

An insulating rod 17 is slidably mounted in the ferrule 7 for longitudinal movement and carries, at its inner end, a flexible conductor 18 having an offset portion 19 that is adapted to automatically slip into a notch 20 in the conductor 8 to make good conductive contact with the member when the rod 17 is moved to its innermost position, as indicated in Fig. 1.

The contact member 16 is conductively connected to the ferrules 7 by means of a flexible conductor 21 that is attached, at one end, to the contact member [illegible] other end, to the ferrule 7 [illegible] member 16 is normally yieldingly retained

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in spaced relation to the conductor 8, or in open position, by means of a helical spring 22 that is secured, at one end, to the inner end of the rod 17 and, at the other end, to the ferrule 7. The inner end of the rod 17 is provided with a barrier member 23 that is slidable longitudinally within the casing. The barrier serves to protect the flexible conductor and the spring 22 from the arc produced when the contact members 8 and 18 are separated.

The latch member 16 is provided with a yoke member 24 that straddles the conductor 8 and the offset portion 19 of the contact member 18. The yoke 24 is provided with inwardly-turned projections 25 that engage the inner face of the offset portion 19 of the contact member 18 in such manner that, when the latch 16 is moved toward the walls of the casing 5, the offset portion 19 of the contact member 18 is withdrawn from engagement with the notch 20 and the circuit broken by reason of the separation of the contact members. The spring 22 is of such construction that it causes the contact member 18 to be withdrawn from the contact member 8 with a snap-action.

In order that the thermal-responsive element 15 may be adjusted to release the contact member 18 under different predetermined current conditions, it is provided with an adjusting screw 26 having threaded engagement with the latch member 16. The end of the screw 26 engages the free end of the bimetallic member 15 and, by turning the screw 26, the position of the latch member 16 relative to the end of the bimetallic element may be varied. By reason of this adjustment, the cut-out mechanism may be made to operate at different time intervals with a given current or at equal time intervals with different currents.

In order to provide convenient means for actuating the latch member 16 manually, the latch 16 is provided with a tube 27 that surrounds the shank of the screw 26 and extends through an opening 28 in the casing 5. The outer end of the tube is provided with an insulating handle 29 which may be gripped for manually operating and tripping the latch 16 to cause the circuit to be interrupted. The handle 29 is provided with a central opening 31 which permits of movement of the screw 26 therein. The head of the screw 26, however, lies beneath the outer face of the handle 29 and, consequently, cannot be operated or adjusted, or accidently turned, except by means of a proper tool, such as a screw driver.

The operation of the cut-out is as follows: the casing is placed within the fuse-jaw members of the circuit in a manner usual to fuses of the cartridge type, with the handle 29 extending outwardly in an accessible position. The screw 26 is adjusted to release the latch 16 under desired current conditions. When an overload occurs in the circuit for a predetermined length of time, the heating element 11 transmits heat to the bimetallic element which causes outward movement of the free end thereof, thus causing the offset portion 19 of the contact member 18 to be withdrawn from the notch 20. When the contact member 18 has been released, the spring 22 causes it to be withdrawn to the open position indicated in Fig. 2 with a snap action. When it is desired to open the circuit manually, the handle or knob 29 is pulled outwardly and the contact member 18 is released by the latch member 16.

Referring to Fig. 4, wherein a modified form of construction is illustrated, it will be seen that the bimetallic element serves as a heating element, thereby eliminating the necessity for an auxiliary heater, such as is illustrated in Fig. 1. The construction of the casing, end ferrules and manual-releasing mechanism is identical to that of the device above described. In the modified form, however, the bimetallic element 15 is directly connected to the end ferrule 6, and the conductor or contact member 8 is insulated from the ferrule. The free end of the bimetallic strip 15 is connected to the contact member 8 by means of a flexible conductor 32. In this construction, excess current, passing through the bimetallic element 15, causes it to be heated. This action causes the free end of the element 15 to move outwardly and to release the offset portion 19 of the contact member 18 from engagement with the contact member 8 and the circuit to be broken by the opening movement of the contact member 18.

A more sensitive latching device is illustrated in Fig. 5, wherein the contact member 18 is provided with a relatively light spring 33 that engages the notch 20 and retains the contact member in engagement with the conductor 8. A device of this character releases the contact members at relatively low current values.

It will be apparent from the foregoing that the construction provides a simple and effective cut-out device that may be used where cartridge fuses have heretofore been employed. While the device is capable of interrupting short-circuits, it may be advisable to place a fuse of greater capacity than the cut-out device in series for the purpose of preventing injury to the cut-out mechanism under severe short-circuit conditions.

While I have shown a device as applied to a cartridge fuse of the ferrule type, it is obvious that the device may be designed for use in fuse clips adapted to receive blades of cartridge fuses having blade terminals.

The device is particularly well adapted for use in motor circuits wherein it is desirable to provide overload protection.

rmal-responsive elements may be so pro-tioned that they are not actuated by nor-l starting currents but will cause the cir-t to be opened when an overload has pre-led a predetermined time.

While I have described and illustrated but embodiments of my invention, it will be parent to those skilled in the art that ious changes, modifications, additions, stitutions and omissions may be made in apparatus illustrated without departing m the spirit and scope of my invention, et forth in the appended claims.

claim as my invention:

. A cut-out device comprising a tubular ulating casing, terminal members mount-on the ends of the casing, relatively mov-e contact members connected to the ter-al members and adapted to conductively nect the terminal members, latching means for securing the contact members in engagement, means for separating the contact members in a direction longitudinally of the casing upon their release by the latching means, and a barrier on one of the members extending transversely of the casing.

2. A cut-out device comprising an insulating casing, terminal members mounted on the ends of the casing, relatively movable contact members connected to the terminal members and adapted to conductively connect the terminal members, means for separating the contact members in a direction longitudinally of the casing, and a barrier on one of the members extending transversely of the casing.

In testimony whereof, I have hereunto subscribed my name this 13th day of March 1922.

MAURITS J. SANDIN.

Oct. 23, 1928. 1,689,007

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C. ARNESEN

THERMOSTATIC SWITCH PLUG

Filed March 24, 1926

Fig. 1.

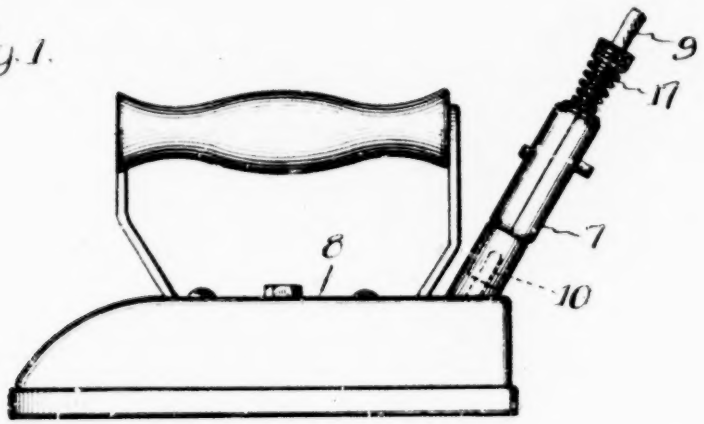


Fig. 2.

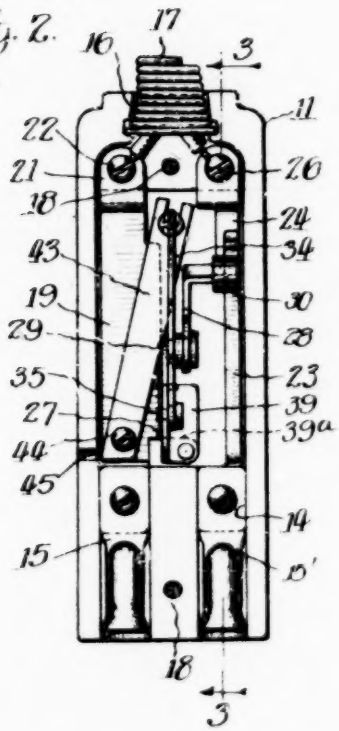


Fig. 3.

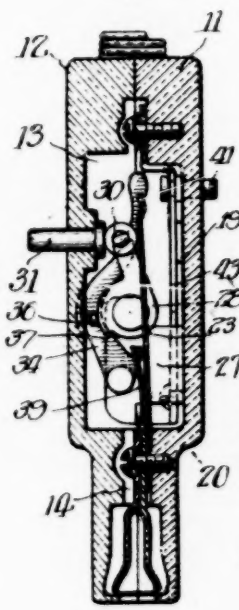
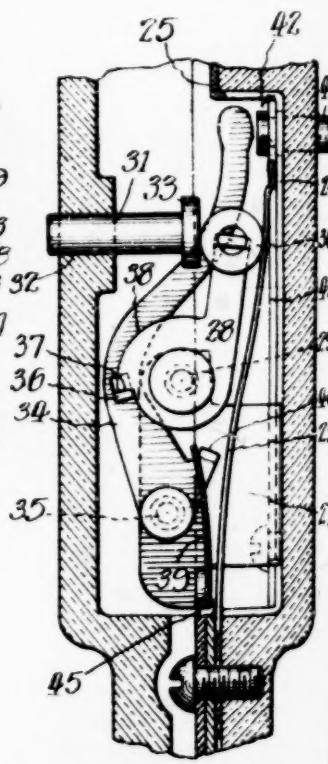


Fig. 4.



Inventor:
Charlotte Arnesen,
By Kindel & Palen a Barlow
Att

Patented Oct. 23, 1928. 1,689,007

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UNITED STATES PATENT OFFICE.

CHARLOTTE ARNESEN, OF CHICAGO, ILLINOIS.

THERMOSTATIC SWITCH PLUG.

Application filed March 24, 1926. Serial No. 96,921.

The invention has general reference to plugs of the type employed in connection with electrical appliances, and more especially heating appliances for effecting a detachable connection between the appliance and a suitable current conductor.

The primary object of my invention is to provide a plug of the general character stated, which embodies in itself a switch of novel and advantageous construction such that it is adapted to be operated thermostatically to open the circuit when the temperature of the appliance to which it is attached reaches a predetermined maximum, and thus prevent injury to the appliance and insure against fire hazards or other damage.

A general object is to provide a plug with a thermostatically operated switch mechanism which is simple in construction, compact in arrangement and effectual in its operation, to the end that a practical controlling unit may be produced at a relatively low cost for use on existing electrical appliances and equipment.

In the accompanying drawings wherein I have illustrated my invention in a preferred form, Figure 1 is a side elevational view of my improved plug applied to an electric iron, the latter being selected as exemplary merely of the appliances and electrical equipment with which my invention is adapted to be used.

Fig. 2 is a fragmentary plan view of one section of the plug in which the switch is mounted.

Fig. 3 is a longitudinal sectional view taken approximately in the plane of line 3—3 of Fig. 2, but showing the two sections of the plug in assembled relation with the switch mechanism therein.

Fig. 4 is a fragmentary longitudinal sectional view on an enlarged scale taken substantially in the same plane as Fig. 3, but showing the parts in a different relation.

Referring now to the drawings, 7 designates generally my improved plug applied to an electric flat iron 8 and serving as a connection between the iron and a cord 9 which may be connected with a suitable source of current supply, the plug being detachably applied to standard terminal posts or pins 10.

The plug comprises as herein shown two substantially similar sections, namely, a base section 11 and a cover section 12. Each of the sections is formed from a substantially flat piece of material such as bakelite or other insulating substance and the adjacent faces of the two sections are cut away so that when the two sections are secured together an inner closed chamber 13 is provided to receive the switch and associated parts.

Leading downwardly and outwardly from the lower end of the chamber 13 are a pair of spaced parallel passages 14 in which socket members 15 and 15′ are entered so as to be capable of receiving standard terminal posts 10. At the opposite or upper end of the chamber 13 an enlarged opening 16 is formed for the reception of the usual coiled wire guide member 17 through which the conductor 9 passes for entry into the plug. It will be understood that the socket members 15 may be of any suitable or prefered construction, and the same is true of the flexible wire guide 17. The two sections of the casing may also be secured together in the usual way as by means of screws 18.

In the chamber 13, at one side thereof, I provide a combined supporting and conducting unit comprising a plate 19 which in the preferred embodiment is adapted to lie flat upon the side wall of the chamber and is rigidly connected with one section of the socket member 15. Thus the plate is bent or offset upwardly slightly as indicated at 20 (Fig. 3) approximately into the plane of the section of the socket member to which it is secured as by means of a screw. Similarly the opposite end of the plate 19 has formed integral therewith a terminal lug 21 offset upwardly from the face of the plate 19 and having one of the wires of the conductor 17 connected thereto as at 22.

One section of the other socket member 15′ has rigidly secured thereto a resilient or spring arm 23 which extends upwardly in the plug through the chamber 13 to a point near the upper end of the chamber. This arm 23 as shown in Fig. 2 is spaced laterally from the plate 19, being arranged in the present instance so as to lie closely adjacent to the wall of the chamber 13 opposite the plate 19. 24 is a stationary contact arm at the upper end of the chamber 13 with which the upper end of the movable arm is adapted to contact. This stationary contact arm 24 is formed in-

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tegral with an upwardly offset terminal lug 25 to which the other wire of the conductor 17 may be secured as by means of a screw 26.

Projecting inwardly from one edge of the plate 19 and extending longitudinally thereof is a flange 27 constituting a supporting bracket for the switch operating mechanism. Said mechanism comprises an arm 28 pivoted on the upper end of the flange 27 as at 29. The other end of this arm 28 is bent so as to carry an insulated stud 30 which on the one hand is adapted to engage the movable contact arm 23 near the upper end of the latter, and on the other hand is adapted to be engaged by the inner end of a push button 31 slidable through an aperture 32 in the cover section of the plug. The stud 30 is preferably made from a short piece of insulating tubing such as bakelite and serves to prevent a short circuit between the spring contact arm 23 and the plate 19. Also, the button 31 is preferably made of insulating material such as bakelite, and its lower end may be enlarged to provide a bearing plate 33. Inward pressure upon the button 31 is adapted to force the spring contact arm 23 into engagement with the stationary contact 24 and thus close the circuit.

The circuit is adapted to be held closed releasably by a latch device comprising an arm 34 pivoted at its lower end at 35 on the flange 27. Midway between its ends this arm 34 has a stop lug 36 which is movable in the swinging movements of the arm into and out of the path of a stop shoulder 37 formed on the arm 28. This shoulder 37 is formed at the end of an arcuate segment 38 formed integral with the arm 28 and upon which the stop lug 36 is adapted to slide in the movement of the stud 30 to force the movable contact arm 23 against the stationary contact 24. The arrangement is such that when the stud is forced by the push button 31 to carry the arm 23 into firm engagement with the contact 24, the stop lug 36 will engage below the shoulder 37. Such movement of the stop lug relative to the shoulder 37 is effected by a leaf spring 39 the lower end of which may be secured upon a lug 39ª on the flange 27 and the upper end of which engages with a lug 40 on the arm 34 spaced a short distance from the pivotal axis 35 of said arm.

The upper portion of the arm 34 curves from one side of the chamber 13 to the other, and its extreme upper end occupies a position adjacent the inner end of an actuator, herein in the form of a push button 41 slidable in a hole in the base section of the casing. The inner end of this actuator has a head 42 with an annular groove therein to receive the bifurcated forward end of a thermostatic element in the form of an elongated metallic strip 43 (Fig. 2). This strip extends generally longitudinally of the chamber 13 and its lower end is secured as at 44 to the plate 19. The latter, it will be remembered, is rigid with one section of the terminal socket member 15, so that heat from the iron or other appliances is conducted through the terminal post of pin and the socket member to the thermostatic element.

It will be seen that the lever arm 34 is adapted to be operated either manually by means of the actuator 41 or automatically by means of the thermostatic element 43. In this connection, it is noted that the leaf spring 39 is made from a thin strip of resilient material so as to exert only a very slight pressure upon the arm 34 whereby to hold the arm in operative relation to the stud-carrying arm 28. In other words, the strength of the spring 39 is sufficient only to insure the operation of the latch device 36, 37.

In the use of my improved plug, the switch is operated manually to close the circuit by depressing the button 31 to carry, through the medium of the stud 30, the spring contact arm 23 into engagement with the stationary contact 24. In this movement of the stud the arm 28 is swung until the stop lug 36, riding on the curved surface 38, is free to snap into position beneath the shoulder 37 under the influence of the spring 39. Preferably the parts are so arranged that after the free end of the movable contact arm 23 engages the stationary contact 24, continued pressure must be applied to the push button 31 so as to bend the arm 23 slightly before the latch device consisting of the stop lug 36 and the shoulder 37 will interengage.

If it is desired to open the circuit manually this may be done by operating the push button 41 so as to swing the arm 34 and disengage the latch device. When this occurs the contact arm 23, because of its resiliency, snaps away from the stationary contact 24 and interrupts the circuit.

To prevent the temperature of the iron or other appliance from becoming too high for safety, the circuit will be broken through the operation of the thermostatic element also acting on the lever arm 34 to disengage the latch device, the arrangement being such that when the temperature of the heat conducting post 19 increases the thermostatic element 43 will bend upwardly at its free end as is well understood in the art, and through the medium of the push button or actuator 41 swing the lever 34. Because of the arrangement employed, the relatively small force which the thermostatic element is capable of exerting is adapted to disengage the latch device.

Whether the latch device is disengaged manually or theremostatically, it will be obvious that by reason of the employment of the two pivoted members 28 and 34 the contacts are held in closed relation during the time that the latch is being operated to effect disengagement. This is especially advantageous in the case of the disengage-

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effected by the thermostatic element, for, as will be understood, this operation may require considerable time and if the movable switch contacts were permitted to move with the thermostatic element an arcing of current across the contacts would occur. The arrangement employed insures a sharp breaking of the circuit, the pivoted member 28 remaining stationary until complete disengagement of the latch device has been effected by the movement of the member 34.

To hasten the cooling of the thermostatic element after the current has been disrupted, a small venting aperture 45 may be provided in the casing, preferably adjacent the lower end of the thermostatic element.

It will be seen that I have provided a controlling unit which is simple and inexpensive, and capable of being readily applied to existing electrical appliances and other equipment. The device is especially applicable to electric flat irons because of combined thermostatic and manual control. In the case of such appliances varying temperatures are required depending upon the nature of the work being done. For example, in ironing thin or delicate materials a relatively low temperature is needed; whereas for heavier materials a substantially higher temperature is required. In the case of prior control devices, the practice has been to fix the temperature at which the current will be interrupted in accordance with the maximum that can be used on the lighter or thinner materials, in order to avoid injury thereto, and it is impossible to increase the temperature of the iron above that fixed point even though that may be necessary for efficient work on heavier materials. I have overcome this objection of prior devices by employing a switch which is both manually and thermostatically operable. This renders it possible to fix the point at which the current is cut off at the maximum temperature required for efficient work in any case, the interruption of the current at any point below this maximum being under the control of the operator. The maximum temperature permitted, it will be understood, is such as to insure against fire hazards due to carelessness, neglect or conditions beyond the control of the operator.

I claim as my invention:

1. In a plug of the character desired, a switch device comprising a pair of relatively movable contact members normally tending to move into spaced relation, a bracket having an arm pivoted thereto, a push button for swinging said arm, a second arm also pivoted on said bracket, a latch device operatively associated with said arms and adapted releasably to hold the first arm against movement and the contact members together, and means for moving the second arm to release said latch device.

2. In a plug of the character described, a switch device comprising a pair of relatively movable contact members normally tending to move into spaced relation, a bracket having an arm pivoted thereto, a push button for swinging said arm, a second arm also pivoted on said bracket and movable relative to the first arm, a latch device operatively associated with said arms and adapted releasably to hold the contact members together, and a thermostatic member adapted to be subjected to the heat of the appliance and operable at a predetermined temperature to move the second arm whereby to actuate the latch device.

3. In a plug of the character described, the combination of a casing having a plate extending longitudinally therethrough so as to constitute an electrical conductor and also adapted to be subjected to the heat of an electrical heating appliance to which the plug may be applied, a stationary contact member and a movable contact member, means for releasably holding said contact members together including a pair of pivoted interlocking arms and a thermostatic element secured to said plate and arranged to move one of said arms whereby to operate the last mentioned means.

4. In a device of the character described, the combination of a pair of relatively movable switch contacts, means for releasably holding said contacts in closed relation including a lever pivoted at one end, and a latch device operatively associated with said lever at a point adjacent its pivoted end, and thermostatically actuated means for engaging said lever near its free end whereby to disengage said latch device.

5. In a device of the character described, the combination of a pair of relatively movable switch contacts, means for releasably holding said contacts in closed relation including a lever and a latch device operatively associated with the lever at a point adjacent its fulcrum, and a thermostatic element adapted to engage said lever at a point remote from its fulcrum to move it and thereby disengage the latch device.

6. In a device of the character described, the combination of a pair of relatively movable switch contacts, means for releasably holding said contacts in closed relation including a pivoted member of substantial length, a second pivoted member operatively associated with one of said switch contacts to move it, said two members having means adapted to interlock at a point near the pivotal axis of the first member and operating to hold said contacts in closed relation, manually operable means for moving said second member, and means for moving the first member to disengage said interlocking means.

7. In a device of the character described, the combination of a stationary switch contact, a movable switch contact in the form of a resilient arm, a member pivoted at one

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end and having a part at its other end adapted to engage with said arm, a manually operable device for moving said member whereby to move the movable contact into engagement with the stationary contact, and means for holding said contacts in closed relation including a lever movable independently of said pivoted member and a releasable latch acting between said member and said lever.

8. In a device of the character described, the combination of a stationary switch contact, a movable switch contact in the form of a resilient arm, a member pivoted at one end and having a part at its other end adapted to engage with said arm, a manually operable device for moving said member whereby to move the movable contact into engagement with the stationary contact, and means for holding said contacts in closed relation including a latch device having a pair of interlocking parts and a lever carrying one of said parts.

9. In a device of the character described, the combination of a stationary switch contact, a movable switch contact in the form of a resilient arm, a member pivoted at one end and having a part at its other end adapted to engage with said arm, a manually operable device for moving said member whereby to move the movable contact into engagement with the stationary contact, and means for holding said contacts in closed relation including a latch device having a pair of interlocking parts and a lever carrying one of said parts, said lever being of substantial length and the said part carried thereby being located adjacent the fulcrum of the lever.

10. In a device of the character described, the combination of a casing providing opposed walls, a pair of switch contacts mounted for relative movement in the casing, a member pivoted in the casing and having a part adapted to engage with one of said contacts, a push button operating through one wall of the casing and adapted to actuate said member in one direction, a latch device operating upon said member whereby to hold said contacts in closed relation, a lever for operating said latch device, a thermostatic device for moving said lever, and a push button operable through the opposite wall of the casing to disengage said latch device.

11. In a device of the character described, the combination of a casing providing opposed walls, a pair of switch contacts mounted for relative movement in the casing, a member pivoted in the casing and having a part adapted to engage with one of said contacts, a push button operating through one wall of the casing and adapted to actuate said member in one direction, a latch device operating upon said member whereby to hold said contacts in closed relation, and a second push button operable through the opposite wall of the casing to disengage said latch device, said latch device including a lever having a detent arranged to interlock with said pivoted member, and the second push button being adapted to engage said lever to release the latch device.

12. In a device of the character described, the combination of a casing, a pair of switch contacts mounted for relative movement in the casing, means for manually moving one of said contacts into closed relation with the other contact, means for releasably holding said contacts in closed relation including a member pivotally mounted near one end of the casing and extending to the other end of the casing, and a thermostatic element having one end secured near the end of the casing adjacent the pivoted end of said lever and its other end operatively associated with the free end of said lever.

13. In a device of the character described, the combination of a casing, a pair of switch contacts mounted for relative movement in the casing, a plate secured in the casing and having an upstanding flange, means for controlling said contacts including a pair of members pivoted on said flange and having means releasably holding them against relative movement, one of said members acting when thus held to hold the switch contacts closed relation, and means for moving the other one of the members to release said holding means.

14. In a device of the character described, the combination of a casing, a pair of switch contacts mounted for relative movement in the casing, a plate secured in the casing and having an upstanding flange, means for controlling said contacts including a pair of members pivoted on said flange and having means releasably holding them against relative movement, one of said members acting when thus held to hold the switch contacts in closed relation, and a thermostatic element in the form of a flat strip secured at one end to said plate and its other end arranged to engage with the other one of said members.

15. A switch plug comprising, in combination, a casing of insulating material, a metallic bracket in said casing, a pair of switch members one of which is thermally connected with said bracket, a pair of contacts normally tending to move into spaced or open relation, an arm pivoted on said bracket, a button projecting from the casing and operatively associated with said arm to close said contacts, a latch device operable to hold said contacts closed, a second arm also pivoted on said bracket and operable while the first arm is stationary to disengage said latch device, said second arm also having a button projecting through the casing, and temperature responsive means including a thermal element secured to said bracket and operable to disengage the latch device.

16. A switch plug comprising, in combina

, a pair of contacts normally tending to
e into open relation, manually operable
ns for closing said contacts, a latch de-
including a pivoted member with which
manual means is operatively associated,
ermostatic element for disengaging the
device, and manually operable means
also adapted to disengage the latch device,
the last mentioned means including a pivoted
member movable independently of the first
mentioned pivoted member.

In testimony whereof, I have hereunto
affixed my signature.

CHARLOTTE ARNESEN.

Nov. 4, 1930. S. M. CARMEAN ET AL 1,780,462

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THERMOSTATIC CONTROL FOR ELECTRIC HEATERS

Filed Aug. 9, 1926

Fig. 1.

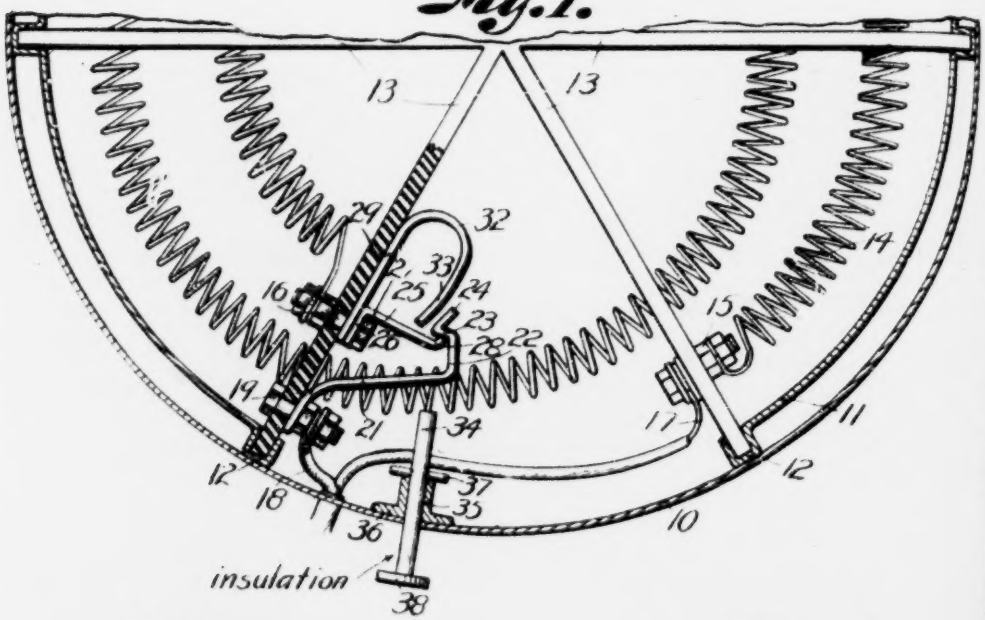

Fig. 2.

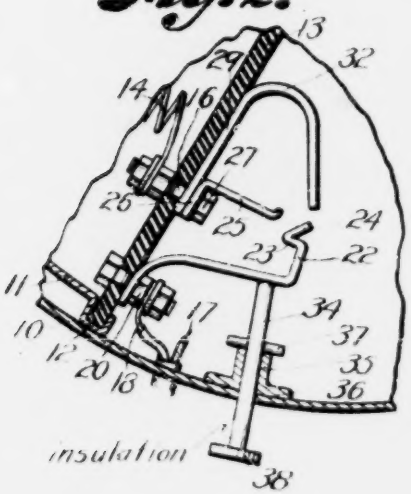

Fig. 3.

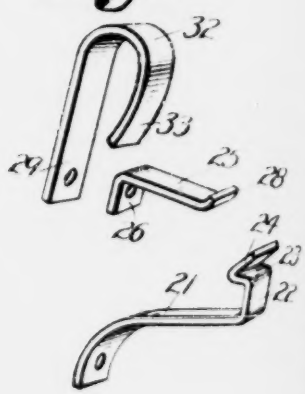

Fig. 4.

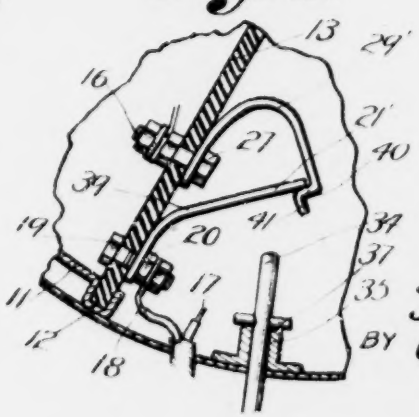

Fig. 5.

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Patented Nov. 4, 1930

1,780,462

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UNITED STATES PATENT OFFICE

SAMUEL M. CARMEAN AND JAMES H. CARMEAN, OF KANSAS CITY, MISSOURI

THERMOSTATIC CONTROL FOR ELECTRIC HEATERS

Application filed August 9, 1926. Serial No. 128,086.

Our invention relates to switches and more particularly to a thermostatically controlled switch for electric heaters.

It is a purpose of our invention to provide a thermostatically operated switch for electric heaters that is extremely simple in construction, comprising a small number of moving parts and which can be applied in a small space without occupying an excessive amount of said space.

In electric heaters that heat by conduction instead of by radiation, it is particularly important that means be provided for breaking the circuit in which the heating elements are located in case the current of air through the heater is interrupted in some manner. This may be done by placing the heater too near to a wall or by placing something on the heater or against the heater at the point where the air either enters or leaves the same. As soon as the circulation of air is interfered with, the temperature within the heater rises rapidly, thus causing the thermostatic means to operate.

Our improved thermostatic means preferably comprises a resilient contact element that has a normal tendency to move toward open circuit position and co-operating contact means embodying a thermostatic element, one of said contact means being provided with a shoulder with which the other contact means engages when in closed circuit position and one of said contact means including thermostatic means for disengaging the shoulder from the other contact means, whereupon the resilient contact means moves to open circuit position by snap action. As the amount of current passing through the switching means is relatively large in a device of this character, it is quite important that a quick break in the circuit is obtained to avoid arcing and injury to the contacts.

Other objects and advantages of our invention will appear as the description of the accompanying drawings proceeds. However, we desire to have it distinctly understood that we do not intend to limit ourselves to the exact details shown or described, but that we intend to include as part of our invention all such obvious changes and modifications of parts as will occur to a person skilled in this art and as would fall within the scope of the claims.

In the drawings:—

Fig. 1 is a fragmentary view, partly in plan and partly in section of an electric heater, embodying our improved switching device.

Fig. 2 is a fragmentary sectional view showing the switching device in open circuit position.

Fig. 3 is a perspective view of the elements of the switching device separated.

Fig. 4 is a view similar to Fig. 2 of a slightly different form of our switching device in closed circuit position, and.

Fig. 5 is an enlarged section taken on the line 5—5 of Fig. 2.

Referring in detail to the drawings, our improved switching device is shown as being applied to an electric heater having an outer wall portion 10 and an inner wall portion 11 spaced therefrom by means of offset portions 12. Said offset portions provide inwardly facing grooves in which the radially extending insulating elements 13 are mounted, said elements forming a spider supporting the spirally arranged heating element 14 which extends from a terminal 15 in a continuous spiral to the terminal 16. The terminal 15 serves as a binding post to which the one conductor 17 leading out of the heater is connected. The other conductor 18 leading out of the heater is connected with a binding post 19 provided on one of the insulating members 13.

Mounted on the binding post 19 and held in position by means of a nut 20 is a resilient contact element 21 which is provided with an inwardly directed portion 22 which terminates in an offset portion 23 and an obliquely extending inclined cam portion 24. A shoulder is thus provided at the offset 23 adjacent the inclined or cam portion 24. Co-operating with the contact 21 is a contact member 25 which has an angular end portion 26 mounted on the binding post 16 and clamped between the head 27 thereon and the insulating member 13. The free end portion of the contact element 25 is preferably provided with an

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offset portion 28 serving as a contact point which is in an engagement with the shoulder 23 when the elements 21 and 25 are in closed circuit position. A thermostatic element 29 which is made up of two layers or plies of metal 30 and 31, having different co-efficients of expansion as is customary in said elements, is mounted between the end portion 26 of the element 25 and the insulating member 13. Said thermostatic element is provided with a gradually curved portion 32 intermediate the ends thereof and with a substantially straight end portion extending from the curved portion 32 to the free end of the thermostatic element. The normal curvature of the portion 32 of the element 29 is such that the end portion 33 thereof is spaced from both the elements 25 and 21. In case of sudden rise of temperature within the heater, the arrangement of the plies of the two different materials in the thermostatic element is such that the tendency of the element is to straighten out, thus increasing the radius of the curvature of portion 32 and moving the end 33 of the element toward the position shown in Fig. 2. As this movement takes place, the end 33 of the element 29 engages with the end portion 24 of the contact element 21 and pushes the shouldered portion 23 thereof off the end of the contact element 25 causing the same to drop to the position shown in Fig. 2 with a snap action.

Means is provided for restoring the movable contact element 21 to normal position, said means comprising a plunger or rod-like member 34 of insulating material which is longitudinally slidably mounted in a guide member 35 which may be secured to the casing 10 in any desired manner as by means of the flange 36. A cross pin 37 is preferably provided for limiting the outward movement of the member 34 and an enlargement or head 38 is preferably provided on the outer end of the member 34 for engagement by the finger of the operator to move the member 34 inwardly so as to move the element 21 toward the element 25. As such movement takes place, the inclined end portion will engage with the end of element 25 to cam the element 21 over, so that the shoulder 23 will snap into engagement with the end 28 of the member 25. Furthermore, by providing the inclined portion 24 which is directed away from the element 25, the tendency will be for the arc, if any occurs, between the contact elements, to be broken, due to the divergence of the end 24 of the contact 21 from the contact 25.

Instead of providing the arrangement shown in Figs. 1, 2, 3, and 5, still a simpler arrangement of switching means may be provided such as shown in Fig. 4. The heater may be of the same construction in this form of the invention as previously described and the same numerals are accordingly applied to the parts of the heater shown as in Figs. 1 and 2. As the arrangement of the binding posts and switch restoring means is the same as in the form shown in Figs. 1, 2, 3, and 5, the same numerals are applied to these parts in Fig. 4 as in the other figures. The resilient contact element 21′ shown in Fig. 4, instead of being provided with a shoulder portion, and a cam portion is made substantially straight, extending from the curved portion 39 thereof, adjacent the secured end of the same toward the free end thereof at an oblique angle relative to the insulating member 13 but said obliquely extending portion being substantially straight. The thermostatic element 29′ which corresponds to the element 29 in Figs. 1, 2, and 3 is made in substantially the same manner as previously described, except that the same is provided with an offset at 40 providing a shoulder with which the free end of the contact element 21′ engages, said thermostatic element terminating in an inclined end portion 41 which serves as a cam portion for moving the resilient contact element 21′ into engagement with the shoulder 40. In the arrangement shown in Fig. 4, the contact element 21′ is under tension when in engagement with the shoulder 40 and has a normal tendency to move toward the member 34. Upon an abnormal increase in temperature in the heater, the shoulder portion 40 tends to move outwardly from the insulating member 13, due to the increase in radius of curvature of the element 29′ as the temperature adjacent the same increases. As a result, the shoulder is moved out of engagement with the co-operating contact element 21′ thus causing the element 21′ to move away from the shoulder with a snap action, the end portion 41 serving to break the arc in a similar manner to that in which the portion 24 of the contact element 21 serves to break the arc as previously described. In restoring the switch to closed circuit position, the end 41 acts as a cam in a similar manner to the end 24, as previously described.

What we claim and desire to secure by Letters-Patent is:—

1. A thermostatically controlled switch comprising a contact having an offset tip, a resilient contact normally tending to move toward open circuit position and having a free end provided with a hook for latching engagement with said tip to close a circuit through the contacts, and a thermostatic member having an arm movable against said hook for unlatching the hook from said tip.

2. In a thermostatic device of the character described, a relatively rigid contact having a hook-like tip, a resilient contact having an arm provided with a bent end movable in a path intersecting said tip and comprising a cam engageable with the tip and movable thereover to tension the arm and a hook movable into latching engagement with the tip

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when the cam has passed the tip and the tension of the arm is relieved, and a thermostatic member having a finger movable against the hook to unlatch the hook from the tip by snap action.

3. In a thermostatic control for electric heaters, a pair of contact bars having free ends, the free end of one bar being bent to form a cam-like tip having a face engageable with the end of the other bar to enable the ends of the bars to pass each other when one of the bars is bent toward the other, said bent bar having a bend at the inner end of the tip forming a hook to engage the end of the other bar and latch the ends of the bars together, one of said bars being resilient and adapted to be moved toward the other bar to effect latching engagement therebetween, said bent tip being adapted to extend outwardly from the latched ends of the bars for the purpose described.

4. In apparatus of the character described including binding posts and a circuit, a rigid contact bar having one end fixed to one binding post and a free end bent to form a tip offset from the plane of the bar, a resilient contact bar having one end fixed to the other binding post and a free end bent to form a portion extending in the same direction as said tip, said portion being inbent to provide a hook and having an inclined tip forming a cam, said cam being movable in a path intersecting the end of the rigid contact upon flexing the resilient contact to engage said end to effect tensioning of the bent end of the resilient contact, said hook being adapted to move into latching engagement with the tip of the rigid contact when the cam has passed the same to close the circuit through the contacts and means for shifting the hook from the tip to permit the resilient contact to return to normal position by snap action.

In testimony whereof we affix our signatures.

SAMUEL M. CARMEAN.
JAMES H. CARMEAN.

Dec. 29, 1931. F. O. COPELAND 1,838,363

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DISPENSING AND LIGHTING DEVICE

Filed March 9, 1927 2 Sheets-Sheet 1

Fig. 1.

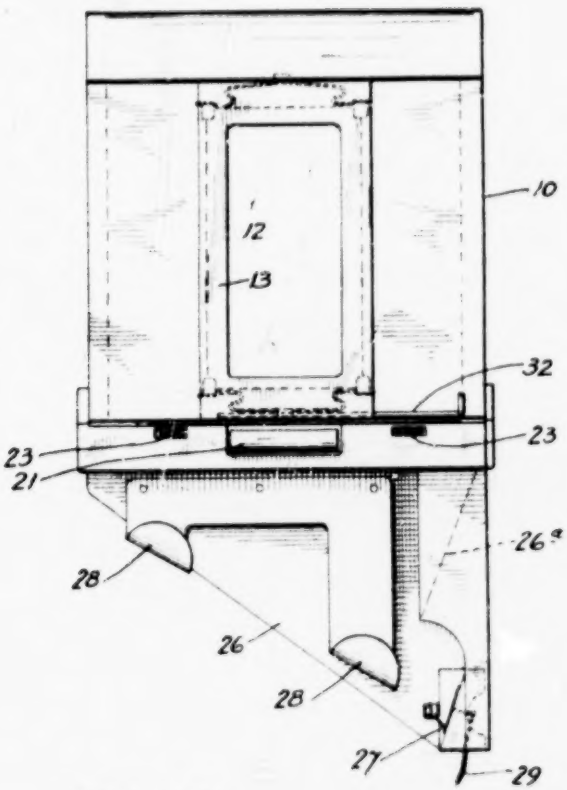


Fig. 2.

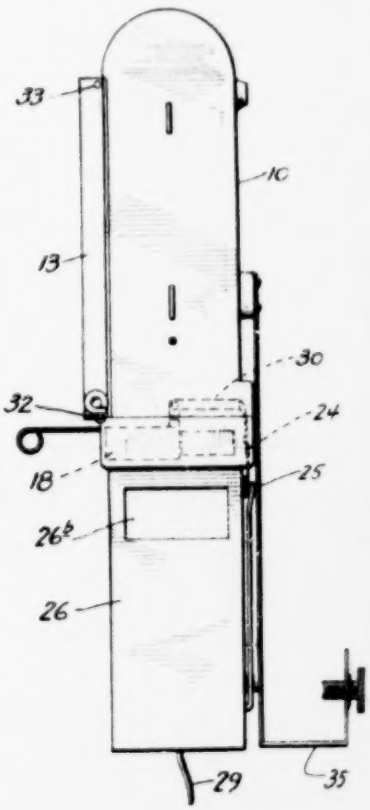


Fig. 3.

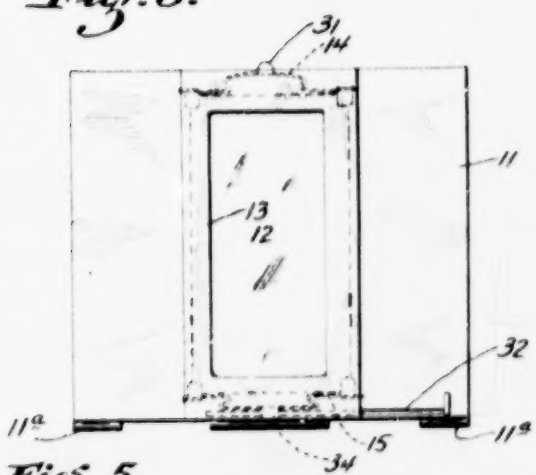
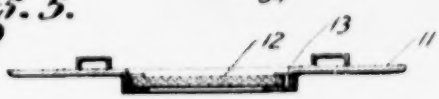


Fig. 4.

Fig. 5.



FRANCIS C. COPELAND
INVENTOR

BY Townsend, Lofton & Abbett
ATTORNEYS

Dec. 29, 1931. F. C COPELAND 1,838,363

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DISPENSING AND LIGHTING DEVICE

Filed March 9. 1927 2 Sheets-Sheet 2

Fig. 6.

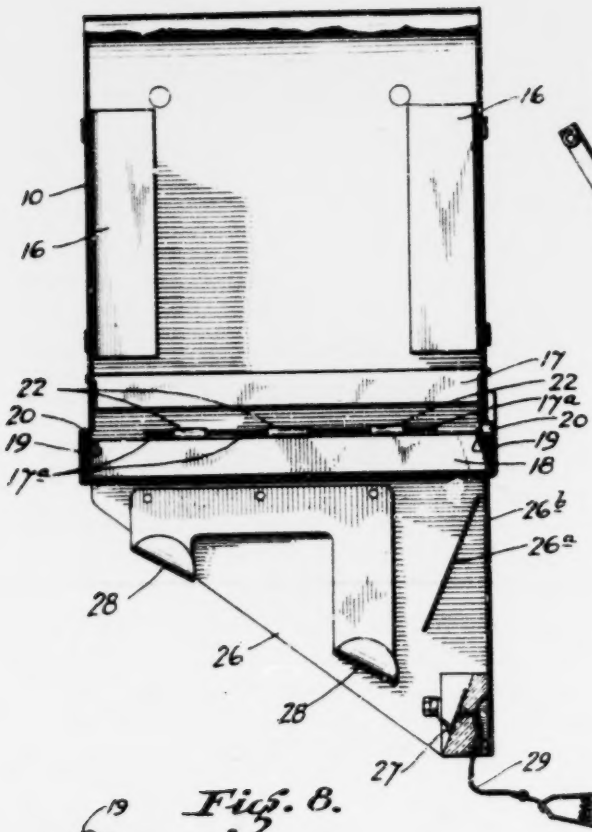


Fig. 7.

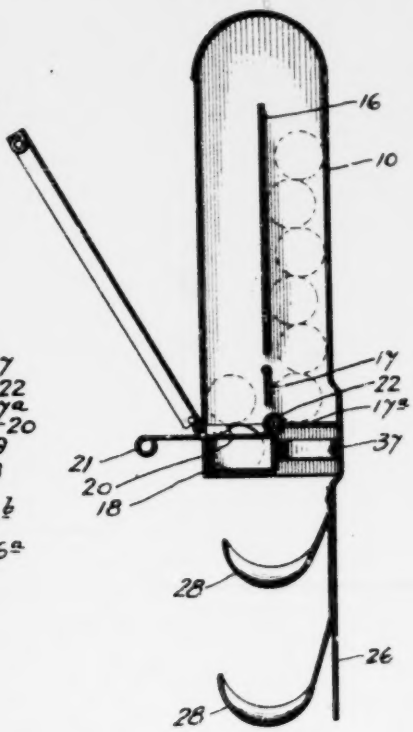


Fig. 8.

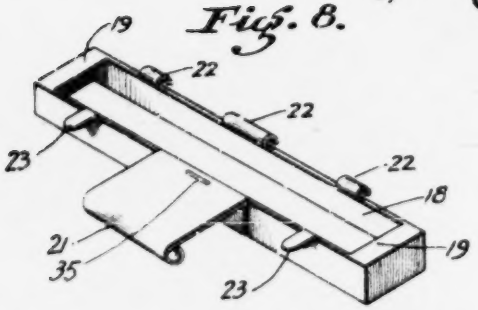


Fig. 9.

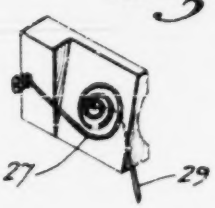
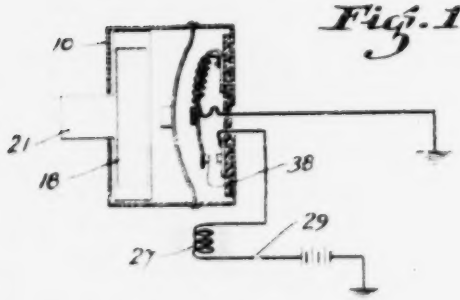


Fig. 10.



FRANCIS C. COPELAND
INVENTOR.

BY Lowman, Lyon & Abbott
ATTORNEYS

Patented Dec. 29, 1931

1,838,363

435

UNITED STATES PATENT OFFICE

FRANCIS C. COPELAND, OF SAN FRANCISCO, CALIFORNIA

DISPENSING AND LIGHTING DEVICE

Application filed March 9, 1927. Serial No. 173,933.

This invention relates to dispensing and lighting devices for cigarettes, cigars, and the like.

In a prior application filed by me November 12, 1923, Serial Number 674,381, entitled "Cigarette delivery and lighting device", I show and describe a dispensing and lighting device of this general character, wherein, by a single movement of a single lever, a cigarette can be delivered from a holder and brought into contact with an electric resistance element, and lighted.

The object of the present invention is to simplify and improve the construction and operation of a device of this character.

Among the more important improvements of the present invention is the delivery of the cigarette in inclined position to the electric resistance element. This insures that the cigarette, through the action of gravity, will force itself against the electric element with sufficient pressure to bring about lighting thereof without applying mechanical pressure to the opposite end. Moreover, in this inclined position the cigarette lights more readily than if it be held in horizontal position. Thus I am enabled to eliminate mechanical suction or draft means.

A further improvement resides in the dispensing mechanism. In said prior application I used a rotating cylinder for dispensing the cigarette, and this was liable to jam and also to tear the cigarette. In the present device I use a slidable dispensing element, movable into dispensing position by a thrust on the part of the operator; and this dispensing element is so arranged that when in dispensing position it forms a ground contact with the electric circuit, and thus causes the electric resistance element to be ignited.

Provision is made to prevent jamming of the dispenser or tearing of the cigarettes. I have also provided novel means to lock the dispensing element against movement, so as to prevent theft of the contents of the holder.

One form which my invention may assume is exemplified in the following description and illustrated in the accompanying drawings, in which

Fig. 1 shows a front elevation of the device;

Fig. 2 shows an end elevation of the same;

Fig. 3 shows a front view of the hinged door separated from the rest of the holder;

Fig. 4 shows a vertical sectional view of said door, taken through the glass panel thereof;

Fig. 5 shows a plan section of the same;

Fig. 6 shows a vertical longitudinal sectional view of the device;

Fig. 7 shows a vertical cross-section of the same;

Fig. 8 shows a perspective view of the dispensing element;

Fig. 9 shows a perspective view of the electric resistance element;

Fig. 10 shows a diagram of the electrical connections.

The present device comprises a box-like holder 10 having a front wall 11 hinged at its lower edge, as indicated at 11^a. This front wall is fitted with a glass panel 12 carried in a rectangular frame 13. There is a leaf spring 14 at the top and a similar spring 15 at the bottom of the frame 13, which springs press upon the edges of the glass to form a cushion support therefor, and in addition control the locking means hereinafter to be described.

The holder as shown has a depth equal to two tiers of cigarettes or cigars, and these tiers are preferably kept separated by division plates 16. Near the bottom of the holder is a swinging gate 17 which permits the articles to pass from the back tier to the front, one at a time, when the front tier is depleted. The bottom of the box is open at its rear half and closed at its front half. Spaced above the opening in the bottom are projections 17^a which support the back tier of cigarettes. Slidably mounted in the bottom of the box is a rectangular frame 18 of a size to receive a single cigar or cigarette. This frame is open both at its top and bottom, and has flanges 19 at its ends, upon which spring leaves 20 arranged within the holder are adapted to seat and hold the frame 18 compressed when the said frame is in retraced position. Projecting out through

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the front wall of the holder is a handle 21 by means of which the dispensing element can be moved back and forth within the holder. The frame 18 has curved lips 22 on the top of its rear wall, extending up between the projections 17ª, to keep the cigarettes out of contact with the sharp edges and to assist in pulling a cigarette forwardly from the back tier to the front. This frame, when moved inwardly, will carry with it a single cigar or cigarette, and will register with the open portion of the bottom and discharge the cigar or cigarette contained therein. When in this extended position, the handle 21 will prevent the cigars or cigarettes in the front tier from dropping downwardly. I also provide the front wall of this frame with lugs 23 to assist in preventing the cigarettes or cigars in the front tier from dropping down when the frame is extended.

When in its extended position, registering with the open portion of the holder, the dispensing element at its back wall will make contact with a conductor bar 24, which bar is supported by a screw 25 secured to an apron 26 which extends downwardly from the holder. This bar 24 is electrically connected to a suitable resistance element 27 arranged on one end of the apron 26. This apron is preferably open at its front and bottom, and has secured to it a pair of curved arms 28 which serve as a cradle to support a cigar or cigarette in inclined position with one end abutting against the resistance element. The angle at which these arms support a cigarette or cigar is sufficiently steep to insure that the cigarette will move by gravity into close enough contact with the lighting element to insure lighting. The inclined position of the cigarette also tends to create a natural draft which makes it possible to effect a lighting thereof without applying suction to the opposite end of the cigarette. Arranged on the apron is a guide plate 26ª to prevent the cigarette from lodging on top of the element 27. An opening 26ᵇ is preferably formed in the apron, which in conjunction with the plate 26ª will form a flue communicating with the lighted end of the cigarette.

The resistance element is connected to a suitable source of current, the circuit of which is closed by the pressure of the frame 18 against the bar 24. Preferably, I make use of a grounded circuit, and I therefore show a single wire 29, leading from a battery to the resistance element. The holder itself being grounded, the circuit will be closed when the element 18 comes in contact with the conductor bar 24. This bar 24 may also be extended above the dispensing frame 18, as indicated at 30, and contact can then be made between the frame and extension 30 when the said frame 18 is retracted by pressing downwardly on the handle 21, and tilting the frame upwardly against the pressure of the springs 20. This permits the igniter to be used without the dispenser.

These devices, while intended for use in many different situations, are frequently applied to the dash of an automobile. For that purpose I show a clamping bracket 35, and I also preferably provide a clip spring 36 on the end of the wire or cable 29, to facilitate hooking it up with the ignition system of the engine. Thus, to apply the device to a motor vehicle, all that is required is to bore a hole through the dash to permit the wire to pass therethrough, after which it can readily be connected to one of the ignition wires by means of the clip spring 36.

There should preferably be a spring 37 in the bottom of the container, tending to force the slidable element 18 forwardly, so that the electrical contact will be broken the instant the hand is removed from the handle 21. However, as indicated in Fig. 10, I may provide a switch 38 in the circuit, arranged to be closed by the employment of the slidable dispensing element 18, said switch adapted to be opened by a thermostat when a pre-determined temperature is reached. This would obviate the necessity of the operator's holding the slidable dispensing element in rearward position during the time the cigarette is being lighted.

On the return stroke of the slidable dispensing element, if the front tier of the container still contains any cigarettes, the swinging gate 17 will not open, and hence the cigarettes in the rear tier will be undisturbed. However, if this front tier or compartment be empty, then the curved lips 22 will engage between the bottom cigarette in the rear tier, and pull it forwardly beneath the swinging gate to the front tier, where it will drop into the frame 18, ready to be dispensed on the next movement.

The locking mechanism is simple, and consists of means for locking the hinged front wall and also for locking the dispensing element against operation. The top spring 14 carries a lip 31 which extends upwardly behind the top wall of the box. It is retracted by inserting a rod or pin such as is indicated at 32, through an opening 33 in the edge of the frame 13, whereby to depress the spring.

A similar locking means is provided for the dispensing element. The lower spring 15 carries a lip 34 which is adapted to extend down through an opening or slot 35 in the handle 21 of the frame 18. However, this lip is normally raised by keeping the spring 15 depressed, which is done by inserting a rod or pin 32 through an opening in the edge of the frame 13. This can be the same rod as is used for the top lock, and it will normally remain in place below, being withdrawn and carried away by the owner when it is desired to lock the dispensing element.

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arious changes in the construction and ngement of the several parts may be em- ed, without departing from the spirit of invention as disclosed in the appended ms.

aving thus described my invention, what aim and desire to secure by Letters Pat- is:

A cigarette dispensing and lighting de- comprising a container to hold a supply igarettes, an ignition element, means to ultaneously drop a cigarette from said ainer and energize said ignition element, means to catch said cigarette and guide end thereof to rest by its own weight nst said ignition element.

A cigarette dispensing and lighting de- comprising a container, an ignition ele- t, means to simultaneously drop a rette from said container and energize ignition element, and inclined means to h said cigarette and guide the end thereof est by its own weight against said igni- element.

In a device for dispensing and lighting rettes or the like, means to hold a supply igarettes, means to deliver the cigarettes at a time therefrom, an igniting element, means to receive and support the ciga- in vertically inclined position with r end contacting with the igniting ele- t.

In a cigarette dispensing and lighting ce, a container for a supply of cigarettes, ensing means slidably mounted at the om of said container to drop cigarettes, at a time, from said container, spring- ated means to lock said dispensing ns and a rod removably inserted beneath spring-actuated means for maintaining dispensing means in inoperative position.

In a cigarette dispensing and lighting ce, a container for a supply of cigarettes, ensing means slidably mounted at the om of said container to drop cigarettes, at a time from said container, an igniting ent, means to support each cigarette in ined position with one end thereof against igniting element, means operated by said ensing means to actuate said igniting ele- t.

In a cigarette dispensing and lighting ce, a container for a supply of cigarettes, niting element, means to simultaneously cigarette from said container and to said igniting element, means to sup- cigarette with the end thereof id igniting element, and a flue dis- said igniting element.

In apparatus for lighting cigarettes the an igniting element, means to rgize element, means to support a arette like with one end thereof ting by ity against said igniting ele- ment, and means to create a natural draft around said end of the cigarette.

8. In a cigarette dispensing and lighting device, a container for a supply of cigarettes, a dispensing means to drop one cigarette at a time from said container, an igniting element, means operated by said dispensing means to energize said igniting element, and a plurality of hooks, inclined from and in line with said ignition element, to receive a cigarette dropped from said container and guide the end thereof against said igniting element.

9. A cigarette dispensing and lighting machine comprising a container to hold a supply of cigarettes, an ignition element, means to simultaneously drop a cigarette from said container and excite said ignition element, and means to catch said cigarette and guide the end thereof to rest by its own weight against said ignition element.

10. A cigarette dispensing and lighting device comprising a container, an ignition element, means to simultaneously drop a cigarette from said container and excite said ignition element, means to catch said cigarette and guide the end thereof to rest by its own weight against said ignition element, and means to create a draft at the end of said cigarette.

11. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, a dispensing slide mounted at the bottom thereof and having an opening large enough to accommodate a cigarette, extending therethrough, means to close the bottom and open the top of the dispensing slide when the slide is in its normal outward position and to open the bottom and close the top when the slide is in its inward cigarette delivering position, an ignition element, and means to allow the cigarette to drop to an angular position, resting by its own weight thereon.

12. In a machine for dispensing and lighting cigarettes or the like, means to hold a supply of cigarettes, means to deliver the cigarettes one at a time therefrom, an igniting element, means to position the cigarettes with one end contacting with the igniting element, and means to cause a natural draft around the igniting element to light the cigarette.

13. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, dispensing means slidably mounted at the bottom of said container to drop cigarettes, one at a time, from said container, an ignition element, means to catch each cigarette and guide one end thereof against said ignition element where it rests by its own weight, means operated by said dispensing means to actuate said ignition element, and means to create a natural draft through said ignition element and across the end of a cigarette placed thereagainst.

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14. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, an ignition element, means to simultaneously drop a cigarette from said container and to operate said ignition element, means to catch said cigarette as it drops and guide the end thereof against said ignition element, and a flue having a large opening at the bottom and a smaller opening at the top disposed above said ignition element to provide a natural current of air across said ignition element and up said flue when said ignition element is heated.

15. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, dispensing means slidably mounted at the bottom of said container to drop one cigarette at a time from said container, means to receive a cigarette as it is dropped from said container, a flue open at the top and bottom attached to the container and below one side thereof, an ignition element releasably attached to said flue adjacent the end of a cigarette in said receiving means, and means operated by said dispensing means to heat said ignition means and thereby produce a natural draft across said ignition element and up said flue.

16. In an apparatus for lighting cigarettes or the like, a cigarette dispensing means, an igniting element, means to energize said element, means to support a cigarette or the like with one end thereof resting by gravity against said igniting element, and means to create a natural draft around said end of the cigarette.

17. In a cigarette dispensing and lighting machine, a container for a supply of cigarettes, a dispensing means to drop one cigarette at a time from said container, an ignition element, means operated by said dispensing means to excite said ignition element, and a plurality of hooks, inclined from and in line with said ignition element, to receive a cigarette dropped from said container and guide the end thereof against said ignition element.

FRANCIS C. COPELAND.

440

Feb. 9, 1932. F. C. COPELAND 1,844,206

LIGHTER FOR CIGARS AND CIGARETTES

Filed April 18. 1927

Fig. 1.

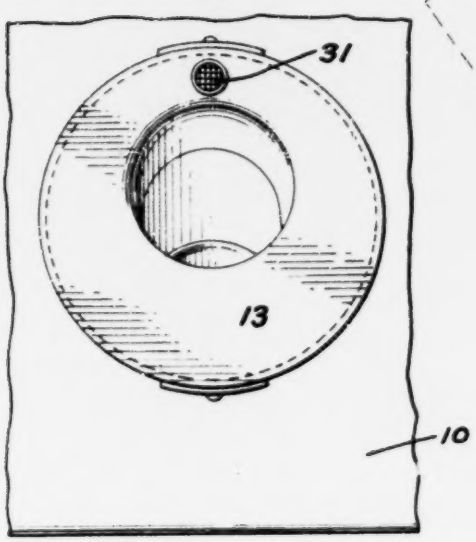


Fig. 2.

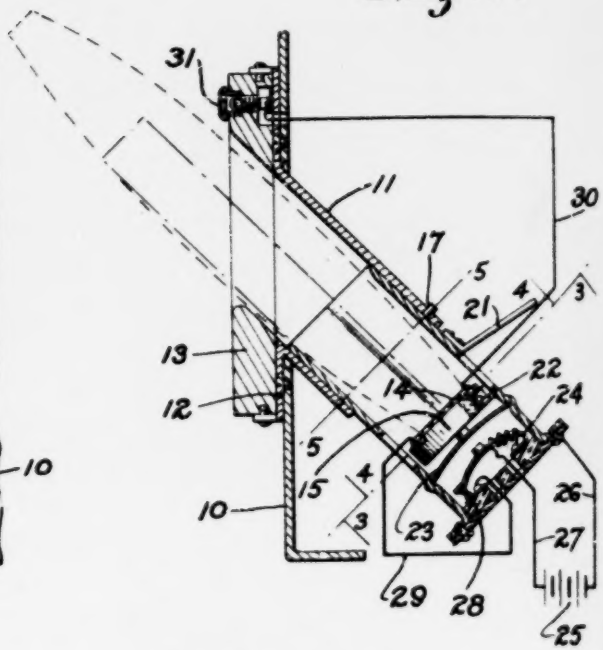


Fig. 3.

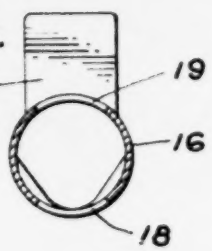


Fig. 4.

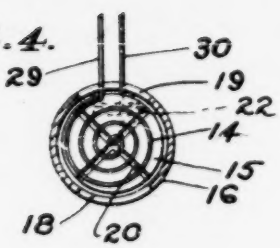


Fig. 5.

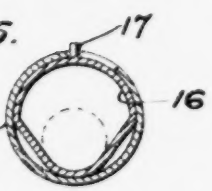
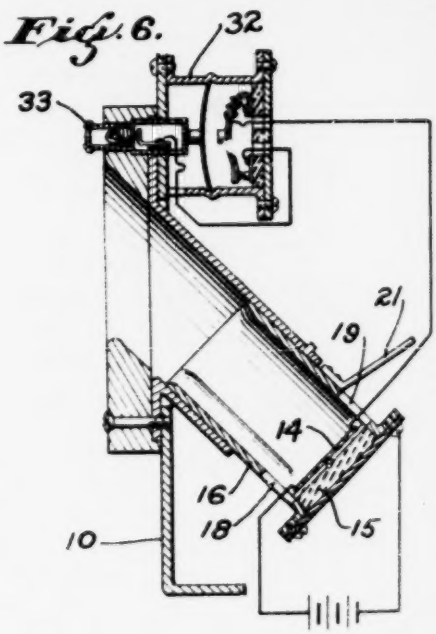


Fig. 6.



INVENTOR.
FRANCIS C. COPELAND.

BY Townsend, Lofton & Hall
ATTORNEYS.

Patented Feb. 9, 1932

1,844,206

441

UNITED STATES PATENT OFFICE

FRANCIS C. COPELAND, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO ARCHIBALD W. DIACK, OF ANN ARBOR, MICHIGAN

LIGHTER FOR CIGARS AND CIGARETTES

Application filed April 18, 1927. Serial No. 184,571.

This invention relates to an electric lighter for cigars and cigarettes.

The principal object of the invention is to provide a simple form of lighter, comprising an electric igniting element adapted to be attached to a support such as the instrument board of an automobile, whereby cigars or cigarettes, when applied to the igniting element, will be lighted without the use of suction. This is brought about by causing the cigar or cigarette to occupy an inclined position, with the end to be lighted disposed downwardly, and arranging vent openings adjacent the igniting element, so that the air will get beneath the end of the cigar or cigarette and create a draft upwardly therethrough.

When applied to an automobile, the igniting element may conveniently be connected to the source of current which supplies the ignition to the engine, and the air currents produced by the cooling fan and the travel of the vehicle will be helpful in inducing a draft through the cigar or cigarette. Provision is made for closing the circuit, either by pressing a switch button by hand or by the thrust of the cigarette or cigar against the igniting element, and the said circuit may be opened automatically after the lapse of the required time to light the cigar or cigarette, through a thermostatic device.

In a device such as forms the subject-matter of the present application, it is not necessary to hold the cigar or cigarette in the mouth, nor to bring the igniting element into contact therewith. All that is required is to simply thrust the cigar or cigarette into the inclined guide and against the igniting element, whereupon the hand may be removed and the cigar or cigarette left in place until it is properly lighted, at which time the current is automatically cut off and the cigar or cigarette is in lighted position, ready to be smoked.

In the accompanying drawings,

Fig. 1 shows a front elevation of a device embodying my invention;

Fig. 2 shows a vertical central transverse section of the same;

Fig. 3 shows a section taken on the line 3—3 of Fig. 2, looking outwardly;

Fig. 4 shows a sectional view on line 4—4 of Fig. 2, looking inwardly;

Fig. 5 shows a sectional view on the line 5—5 of Fig. 2;

Fig. 6 shows a vertical central sectional view of a modified arrangement of the circuit-controlling means.

A supporting wall is shown at 10, which may be considered as the instrument board of an automobile. A tubular guide 11, arranged at a downward angle on a flange 12, extends through an opening in the board and is secured in place by screws passing through the flange and board. The flange is preferably covered by an escutcheon plate 13.

The igniting element includes a suitable resistance wire 14, arranged spirally on a refractory base 15 and supported in the end of a tubular extension 16. This tubular extension fits telescopically into the guide member 11 and is held therein by a bayonet joint 17, so that the igniting element may be conveniently inserted or removed without disturbing the other parts of the device.

Adjacent the igniting element the tubular extension has a lower vent opening 18 and an upper vent opening 19, whereby a current of air may pass in close proximity with the end of the cigar or cigarette, to facilitate lighting. Lighting is further facilitated by forming the refractory base with grooves 20, whereby the air will circulate beneath the resistance wires, and hence beneath the end of the cigar or cigarette. Due to the angle of the guide member, the cigar or cigarette will occupy an inclined position, with the end to be lighted extending downwardly so that air passing the lighted end will tend to move upwardly through the tobacco, thus facilitating combustion and making it unnecessary to apply suction to the cigar or cigarette during the time it is being lighted. The force of this draft through the cigar or cigarette is considerably increased where the device is applied to an automobile, since in that case the cooling fan will throw a current of air rearwardly, and considerable movement of air will also result from the travel of the

vehicle. I prefer to position a deflector plate 21 adjacent the top opening 19, so as to attract the current of air onto the igniting element and beneath the end of the cigar or cigarette. With the ventilating openings 18 and 19 above and below the igniting element, a flue action will be present at all times. This will induce a current of air around the end of the cigar or cigarette and between the resistance element and its base, which will be sufficient to cause lighting without suction, even though the tubular member be in a horizontal position.

As shown in Fig. 2, the base of the igniting element is hinged at 22, and rests against a buckling spring 23. Pressure of the cigar or cigarette against the igniting element will control the buckling spring past center, where it will contact with a thermostatic bar 24. This bar forms a circuit closer for a one-line circuit. The source of current is indicated at 25, and is grounded at one side by a lead 26. On the other side of the current source is a lead 27, coiled around the thermostatic bar and in contact therewith. The other end of the bar is free, and when pressed upon by the buckling spring is adapted to move into contact with a contact plate 28, to which another lead 29 is connected. This lead 29 extends to the resistance wires or igniting element, and the other side of the resistance wires is connected with a lead 30 which is mounted onto the frame of the device. A little signal lamp 31 is cut into the lead 30 and arranged on the escutcheon plate to indicate the condition of the circuit.

The thermostatic bar is so arranged that after a lapse of time sufficient to supply the required temperature to the igniting element for lighting a cigar or cigarette, the bar will expand against the buckling spring and throw the latter back to initial position, thus leaving the circuit broken, where it will remain until a subsequent time when a cigarette or cigar is inserted.

In the modification shown in Fig. 6, the igniting element is stationarily mounted in the end of the tubular extension 16 and a thermostatic circuit control is arranged in a housing 32 adjacent the signal light. The buckling spring in this case is moved to position where the thermostatic bar closes the circuit by provision of a cage 33 which carries the signal light, said cage being slidably mounted in the escutcheon plate, and capable of endwise movement when pressure is applied thereto with the thumb or finger.

Various changes in the construction and arrangement of the several parts herein shown and described may be employed without departing from the spirit of my invention as disclosed in the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A lighter for cigars and cigarettes, comprising a guide, an electric igniting element at the lower end thereof, manual means for closing a circuit through said igniting element, and thermostatic means for opening said circuit.

2. A lighter for cigars and cigarettes, comprising a guide, an electric igniting element at the lower end thereof, means actuated by movement of the igniting element under the thrust of a cigar or cigarette to close the circuit through said igniting element, and thermostatic means for opening the said circuit.

3. A lighter for cigars and cigarettes adapted to be attached to the instrument board of an automobile, comprising a guide for the cigar or cigarette secured to the instrument board and extending through an opening therein and downwardly at an angle, said guide being of sufficient length to independently support a cigar or cigarette, an igniting element at the lower end of the guide with which the end of the cigar or cigarette contacts and rests by gravity thereon, and ventilating means at the lower end of the guide to expose the end of the cigar or cigarette to current of air, whereby a draft will be created around the end of the cigar or cigarette to cause lighting thereof through natural draft.

4. A lighter for cigars and cigarettes comprising a socket of sufficient length and so positioned as to independently support the cigar or cigarette, an electric igniting element at the inner end of the socket and comprising a support of insulating material, and a resistance wire arranged on said support, and means to permit air to circulate upwardly through the inner end of the socket and between the wire and the support, whereby the cigar or cigarette may be lighted through natural draft.

5. A lighter for cigars or cigarettes, comprising a socket of sufficient length so arranged as to independently support a cigar or cigarette, an electric igniting element at the inner end of the socket, normally inactive, and means engageable by the cigar or cigarette when in the socket, to activate the igniting element.

6. A lighter, comprising in combination a vertical support, a socket on said support, of sufficient length and so positioned as to receive and support a cigar or cigarette, said socket being formed of telescoping sections detachably connected together, and an electric igniting element arranged on the innermost section.

7. A lighter for cigars and cigarettes, comprising a socket of sufficient length and so positioned as to independently support a cigar or cigarette, an electric igniting element at the inner end thereof, comprising an insulating base, resistance wires arranged thereon, and grooves formed in said base be

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the resistance wires, permitting circu-
of air between the wires and base.
A lighter for cigars and cigarettes,
ted to be attached to the instrument
of an automobile, comprising a guide
ed to the instrument board of sufficient
and so arranged as to independently
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nt of air, whereby a draft will be created
d the end of the cigar or cigarette to
lighting thereof through natural draft,
s to control the circuit for activating
niting element, and means on the in-
ent board to indicate when said element
ivated.

FRANCIS C. COPELAND.

July 18, 1933.

446

F. C. COPELAND

CIGAR AND CIGARETTE LIGHTER

Filed Aug. 27, 1927

1,919,159

Fig. 1.

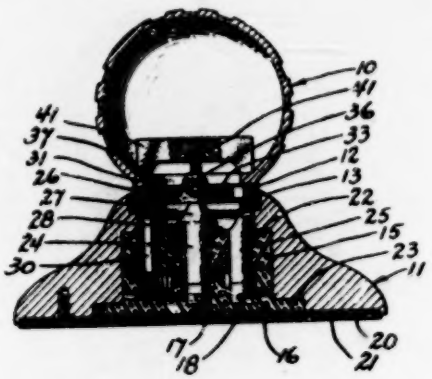


Fig. 2.

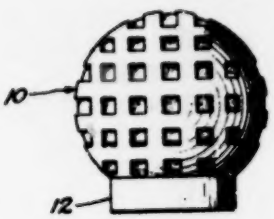


Fig. 3.

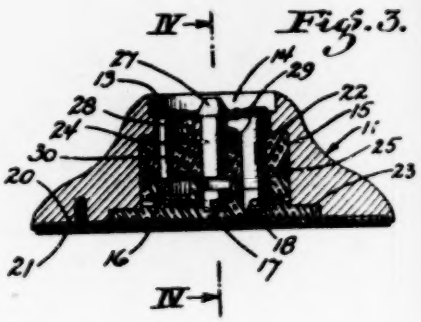


Fig. 5.

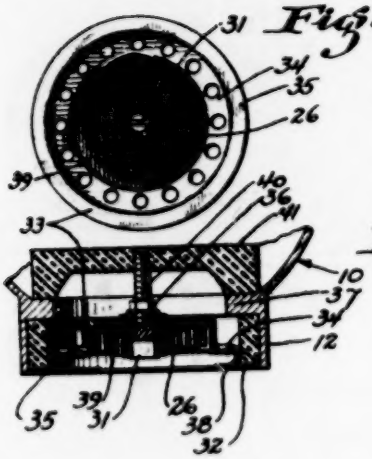
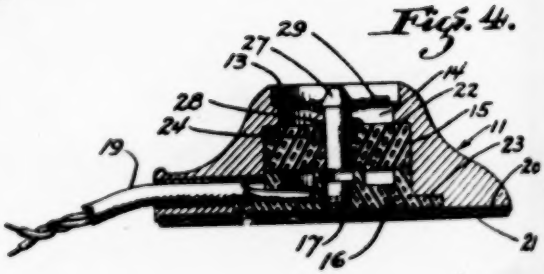


Fig. 6.

Fig. 4.



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BY Lowrance, Loftus & Allen
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Patented July 18, 1933

1,919,159
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UNITED STATES PATENT OFFICE

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CIGAR AND CIGARETTE LIGHTER

Application filed August 27, 1927. Serial No. 215,813.

My present invention relates to an electric lighter for cigars and cigarettes.

The principal object of my invention is to provide a lighter of the above type which can be freely handled and used without interference by entangling leads or other current conducting means.

A further object of my invention is to provide a lighter having the above features, which is safe, reliable and effective in its operation.

Other features and objects will be apparent as the description proceeds, reference being had to the accompanying drawing, in which—

Fig. 1 is a side elevation, partly in section, showing my device in its heating up position.

Fig. 2 shows the lighter element alone.

Fig. 3 is a sectional view of the base showing the position of the parts with the lighter removed.

Fig. 4 is a sectional view of Fig. 3 taken along the line IV—IV.

Fig. 5 is an enlarged inverted plan view of the heater element.

Fig. 6 is a fragmentary enlarged sectional view of the heater element.

In the drawing, I have illustrated my invention as having two separable parts and for purposes of appearance these parts are designed to represent a golf ball and tee. The golf ball element is designated by the numeral 10 and the tee element by the numeral 11. The ball 10 has an extending rim 12 on its lower side which engages with a recess 13 in the tee 11 and holds the ball to all appearances in a teed position when not in use.

The tee or base member 11 has a vertical opening 14 through its center, in which is mounted a contact carrying member 15. A second member 16 which cooperates with the member 15 is also located in the base member 11. Connection studs 17 and 18 are provided in the member 16 to which current conducting leads 19 are attached. After the parts are assembled a plate 20 having a felt pad 21 is secured to the bottom of the member 11 to hold the parts together. Shoulders 22 and 23 are formed in the member 11 to prevent the parts 15 and 16 from moving after the plate 20 is secured in place. The member 15 supports the contacts 24 and 25 which, when in operation, act to conduct current to a heater element 26 carried by the ball or removable member 10. The contact 24 is adapted to slide up and down in the center of the member 15 and is provided with an enlarged head 27 under which a spring 28 is located. This spring 28 operates to keep the contact 24 out of contact with its cooperating stud 17, as shown in Fig. 3, when the ball 10 is removed and thereby provides an open circuit so that danger of shocks, etc., is eliminated. The spring 28 is made sufficiently stiff to hold the weight of the removable element 10 and hold the circuit open until additional pressure is brought to bear upon the ball as will be hereinafter described. The contact 25 has an annular resilient conducting member 29 secured to it. This member 29 is supported on one side by the contact 25 and on its other side by a pin 30. It should be pointed out here that the member 29 can be dispensed with and that the connections can be made directly upon the contact 25.

The ball or removable member 10, as previously stated, carries a heater element 26 which is adapted to be brought into engagement with the contacts 24 and 25 when it is desired to heat it. The element 26 is located in the extending rim 12 on the ball and has two concentrically arranged contacts which comprise a central contact 31 and an annular contact 32. These contacts 31 and 32 cooperate and connect respectively with the contact head 27 and the annular member 29 mounted in the base member 11. In this manner a circuit is established through the heater element 26 when the heater is to be used. It should be noted here as a result of the arrangement of the contacts concentric with each other that the contacts will always connect with their respective cooperating element irrespective of the angular position of the ball about its vertical axis.

Another and very important feature of the arrangement shown is that the heater element 26 will be completely enclosed within

the space between the stationary member 11 and the removable member 10 when these parts are together. This facilitates and produces a rapid heating up of the heater unit by preventing radiation of heat therefrom during the heating up period and it also protects the unit against injury when the same is not in use

By referring to Figs. 5 and 6, it will be seen that the heater element 26 is formed in a spiral and that it is mounted in an inverted cup or dished holder 33. The cup 33 is formed with two outwardly extending flanges 34 and 35, the latter of which forms the aforementioned contact 32. The outer turn of the spiral heater element 26 is electrically connected with the cup 33 and its central turn is electrically connected to the contact 31. The contact 31 projects outwardly from the bottom of the cup and holds the heating element in what I have termed a conical form. A screw threaded portion 40 on the contact 31 extends through the cup 33 and engages a bridging member 41 of insulating material and thus holds the parts together. Surrounding the threaded portion of the stud 31 and between the heater element 26 and the cup 33 is an insulating member 39. From the drawing, it will be seen that the heater element 26, the cup 33 and the contact 31 are held together as a unit by means of a nut 36 upon the threaded portion 40 of the stud 31. It will also be seen that the ball portion is provided with an inwardly projecting annular rim 37 against one side of which a spacer 38 engages and against the other side of which the bridging member 41 engages. The bridging member 41 is provided with a threaded hole into which the stud 31 extends and operates to hold the ball and heating unit together. By having the portion of the plate or holder 33 between the flange 36 and the heating element 26 perforated dissipation of the heat of the heating element through the plate is reduced as is the heating of the body of the igniting unit.

The operation of a device built in accordance with my invention is as follows: Assuming the base 11 to be connected with a suitable source of electrical current by means of leads 19 and that the ball 10 is resting upon the tee 11 with the contacts 24 and 31 in contact, but with the contact 24 and stud out of contact with each other due to the tension of the spring 28. The operator grasps or lays his hand upon the ball 10 and pushes it downwardly. This brings the contact 24 and the stud 17 into engagement and completes a circuit through the heater element 26. The ball 10 is held in this depressed position a sufficient time to permit the heating element to attain a glowing temperature. The ball 10 can then be picked up free of the base and used as a lighter as long as the element 26 retains sufficient heat. With respect to this feature, it should be pointed out that I have formed the heater element of ribbon with the edge only exposed to the lighting operation. By arranging the heater in this manner, I have found that it retains its heat longer and that by arranging the turns in a spiral, that is with the turns in different transverse planes and away from the support, I permit a free circulation of air through the turns, the air first passing between the exposed turns and then back again through the turns adjacent cigar or cigarette being lighted. In this way the air is subjected to heating twice before it reaches the cigar or cigarette.

While I have shown a preferred embodiment by way of illustration, I desire to have it understood that I do not wish to be limited thereby, but aim to cover all modifications which come within the scope of the following claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. A portable electric resistance lighter for cigars and the like comprising a spirally formed heater element, and a support for said resistance unit having an unvented recess into which the heater element is mounted, all characterized by the fact that the spiral is formed of a ribbon resister having its turns presented edgewise and located in different transverse planes to form a cone, whereby only the edge of said resistance element will contact with the article to be lighted and all circulation of air caused by draft upon the article being lighted will past first inwardly through said spiral outside of the area of contact of said article and then outwardly through said spiral within the area of said article.

2. An electric cigar-lighter comprising a holding device for removably supporting an electrical igniting unit which is adapted to make closed circuit engagement therewith when supported on the holding device; and a switch device mounted on the holding device comprising two cooperating contacts, one of which is movable by hand operation, toward the other to close an electric circuit leading from a source of current to the holding device when the igniting unit is moved in a straight line on the holding device.

3. In an electrical device of the class described, a holding device upon which a removable translating unit may be supported; and a switch device comprising a stationary contact and a movable contact on the holding device for closing a current supply circuit including the part of the holding device on which the translating unit is supported when pressure is brought to bear on the holding device.

4. A cigar-lighter comprising a body, a heating element, the body having a cavity

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pen at one end within which the heating element is located, the other end of the body being closed and constituting a handle by means of which the cigar-lighter may be grasped, and means at the open end of the body for mounting the cigar-lighter on a supporting device for quick removal and replacement so that the heating element is concealed by the supporting device and the closed end of the body is exposed and accessible to be manually engaged for the manipulation of the cigar-lighter.

5. A cigar-lighter comprising a body having a cavity opening at one end of the body; a heating element located in said cavity and being accessible for engagement with a cigar or cigarette to ignite the end of the same; and a contact connectable to a source of E. M. F. and removably extending into said cavity to connect the heating element to a source of E. M. F. to heat the heating element and prepare the latter for the lighting of a cigar or cigarette.

6. An electric cigar-lighter comprising a holding device for removably supporting an electrical igniting unit which is adapted to make closed circuit engagement therewith when supported on the holding device; and a switch device mounted on the holding device comprising two cooperating contacts, one of which is movable by hand operation through the medium of the igniting unit when supported on the holding device toward the other to close an electric circuit leading from a source of current to the holding device.

7. In an electric appliance receptacle for cigar lighters and the like, the combination of a pair of exposed current conducting contacts adapted to be connected with a removable lighter element and terminals connected to a source of current, one of said contacts being movable with respect to one of said terminals, and means tending to hold said movable contact out of conducting relation with the said terminal when the lighter element is removed from the receptacle.

8. In an electric cigar-lighter, the combination of a portable resistance heater unit having concentrically arranged contacts at the ends thereof, a receptacle having an exposed central contact and an annular contact adapted to cooperate with the contacts of said resistor unit and furnish current to the unit when the aforesaid contacts engage, and means adapted to disconnect said exposed central contact from the source of current supply when said unit is removed and permit a circuit to be established through said unit when pressure is exerted forcing said unit into said receptacle.

9. A cigar lighter comprising a holder having a base adapted to rest by gravity on the surface of a table or the like; an igniting unit including a heating element supported on the holder for complete electrical and mechanical separation therefrom for use; and means on the holder and on the removable igniting unit adapted to engage when the removable igniting unit is supported on the holder, said means including electrical contacts for carrying current to the heating element carried by the igniting unit when the latter is moved in a direction toward the surface on which the holder is supported, and the engagement of said means on the base and on the removable igniting unit being such that the removable igniting unit may be lifted from the base for use without lifting the holder from the supporting surface.

10. A cigar lighter comprising a holder having a base adapted to rest by gravity on the surface of a table or the like; an igniting unit including a heating element supported on the holder for complete electrical and mechanical separation therefrom for use; and means on the holder and on the removable igniting unit adapted to engage when the removable igniting unit is supported on the holder said means including electrical contacts for carrying current to the heating element carried by the igniting unit when the latter is moved in a direction toward the surface on which the holder is supported.

11. A cigar lighter comprising a holder and a base adapted to rest by gravity on the surface of a table or the like, said holder being provided with a cavity at its top: an igniting unit having a collar adapted to fit in the cavity of the holder to be supported thereby for complete mechanical and electrical separation therefrom; a heating element carried by the igniting unit, and means on the holder and on the removable igniting unit adapted to engage when the removable igniting unit is supported on the holder, said means including electrical contacts for carrying current to the heating element carried by the igniting unit, when the latter is moved in a direction toward the surface on which the holder is supported.

12. A cigar lighter comprising a holder and including a base adapted to rest by gravity on the surface of a table or the like, said holder being provided with a cavity at its top; an igniting unit having a collar adapted to fit in the cavity of the holder to be supported thereby for complete mechanical and electrical separation therefrom: and means on the holder and on the removable igniting unit adapted to engage when the removable igniting unit is supported on the holder, said means including electrical contacts for carrying current to a heating element carried by the igniting unit when the latter is moved in a direction toward the surface on which the holder is supported, and the engagement of said means on the base and on the igniting unit being such that the igniting unit may be removed from the base for use

without lifting the holder from the supporting surface.

13. An electric lighter for cigars and the like comprising a support; two terminals carried by said support, a support contact continuously in electrical engagement with one of said terminals; a second support contact normally yieldingly held out of electrical engagement with the other of said terminals; a removable igniter unit; a heating element on said unit; and two contacts on the igniter unit, one of which is normally in engagement with the normally dead second support contact, and the other of which is normally out of electrical engagement with the first of said support contacts.

14. An electric lighter for cigars and the like comprising a support; two terminals carried by said support; a support contact continuously in electrical engagement with one of said terminals; a second support contact normally yieldingly held out of electrical engagement with the other of said terminals; a removable igniter unit; a heating element on said unit; two contacts on the igniter, one of which is normally in engagement with the normally dead second support contact, and the other of which is normally out of electrical engagement with the first of said support contacts; and means to permit movement of the igniting unit with respect to the support and to thereby close the electrical circuit between the two support terminals and the two igniter contacts.

15. An electric cigar lighter comprising a supporting device; a removable igniting unit; a first contact and a second contact on the igniting unit; a first contact and a second contact on the supporting device connected to a current supply; a first intermediate current conducting member between the two first contacts and a second intermediate current conducting member between the two second contacts; and means normally tending to separate the first intermediate conducting member from one of said first contacts and separate the second intermediate member from one of said second contacts to provide a double gap in the current supply to said igniting unit.

16. An electric cigar lighter comprising a supporting device; a removable igniting unit; two-pole current carrying means on the supporting device; cooperating two-pole current carrying means on the igniter unit; and yielding means including a switch in the base normally tending to keep the current-carrying means of both polarities on the igniting unit out of current conducting relation with the current carrying means of both polarities on the supporting device.

17. An electric cigar lighter comprising a supporting device; a removable igniting unit; two-pole current carrying means on the supporting device; cooperating two-pole circuit carrying means on the igniter carrier; and a spring plunger normally tending to keep the current carrying means of both polarities on the igniting unit out of current conducting relation with the current carrying means of both polarities on the supporting device.

18. In an electrical device of the class described, a holding device upon which a removable translating unit may be supported; and a switch device comprising a stationary contact and a movable contact on the holding device for closing a current supply circuit including the part of the holding device on which the translating unit is supported when said part of the holding device is moved.

19. A cigar lighter comprising a body having a cavity open at one end of the body; a heating element located in said cavity and being accessible for engagement with a cigar or cigarette to ignite the end of the same; and a contact at the mouth of the cavity for removable engagement with a contact on the holding device to connect the heating element to a source of E. M. F. to heat the element and prepare the latter for the lighting of a cigar or cigarette.

20. An electric cigar lighter comprising a holding device; a removable translating unit adapted to be removably supported on the holding device; a resistance element; a circuit for the latter including a source of E. M. F., a pair of contacts on the holder, and a cooperating pair of contacts on the unit; at least one of said contacts being movable into electrical engagement with another contact after said pairs of holder and unit contacts are electrically engaged and as a result of the continued movement of the translating unit in a straight line relative to the holding device.

21. An igniting unit for electric cigar lighters comprising a body constituting a handle; a heating element of the type adapted to hold its heat for use after becoming electrically deenergized; and a plate supporting said heating element having a cup portion for receiving and confining the heating element and a marginal flange in contact with the body and a portion inwardly of said marginal portion having the material of the plate perforated to reduce dissipation of the heat of the heating element through the plate and to reduce heating of the body by reducing the conduction of heat thereto through the plate.

22. A cigar-lighter comprising a body, a heating element, the body having a cavity open at one end within which the heating element is located, the other end of the body being closed and constituting a handle by means of which the cigar-lighter may be grasped, means at the open end of the body for mounting the cigar-lighter on a supporting device for quick removal and replacement

so that the heating element is concealed by the supporting device and the closed end of the body is exposed and accessible to be manually engaged for the manipulation of the cigar-lighter, and means for closing a current supply circuit through the heating element to bring the same to incandescence for use.

23. A cigar-lighter comprising a body having a cavity opening at one end of the body the other end of the cavity being closed; a heating element located in said cavity and being accessible for engagement with a cigar or cigarette to ignite the end of the same; a contact connectable to a source of E. M. F. and removably extending into said cavity through the open end to connect the heating element to a source of E. M. F. to heat the heating element and prepare the latter for the lighting of a cigar or cigarette; and means for causing current to flow from said source of E. M. F. through said contacts and said heating element.

24. An electric cigar-lighter comprising an igniting unit having a resistance wire ribbon disposed edgewise and spirally wound to form a disk-like heating element; an igniting unit body of knob-like form having a cavity open at one end of the body in which the disk-like heating element is supported transversely of the axis of the body, the other end of the body being closed and forming a handle for the manipulation of the igniting unit; a boss-like holding device on which the igniting unit is supported for movement and for quick and complete removal and replacement incident to its use with the open end of the igniting unit body facing the holding device; and means on the holding device and on the igniting unit including an annular contact surrounding the disk-like heating element cooperating to electrically connect the heating element to a source of current when the igniting unit is moved toward the holding device by pressure applied to the closed end of the insulating body.

25. An electric cigar-lighter comprising an igniting unit having a spirally coiled resistance element; an igniting unit body of knob-like form having a cavity open at one end of the body in which the resistance coil is supported and the other end of the body being closed and forming a handle for the manipulation of the igniting unit; and a boss-like holding device on which the igniting unit is supported for movement and for quick and complete removal and replacement incident to its use with the open end of the igniting unit body facing the holding device, said body having a cylindrical portion around its open end and said holding device having a shallow recess receiving said cylindrical portion of the body; and separable cooperating contacts on the igniting unit and holding device for carrying current to the resistance element.

26. An electric cigar-lighter comprising an igniting unit having a spirally coiled resistance element; an igniting unit body of knob-like form having a cavity open at one end of the body in which the resistance coil is supported and the other end of the body being closed and forming a handle for the manipulation of the igniting unit; a boss-like holding device on which the igniting unit is supported for movement and for quick and complete removal and replacement incident to its use with the open end of the igniting unit body facing the holding device; said body being cylindrical at its open end and said holding device having a recess telescopically receiving said cylindrical portion of the body; and separable cooperating contacts, at least one of which is yielding, on the igniting unit and on the holding device for carrying current to the resistance element.

27. An electric cigar-lighter comprising an igniting unit having a spirally coiled resistance element; an igniting unit body of knob-like form having a cavity open at one end of the body in which the resistance coil is supported and the other end of the body being closed and forming a handle for the manipulation of the igniting unit; and a boss-like holding device on which the igniting unit is supported for movement and for quick and complete removal and replacement incident to its use with the open end of the igniting unit body facing the holding device, and separable contacts on the igniting unit and holding device for carrying current to the resistance element.

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May 28, 1935. B. DESS 2,002,492

CIGARETTE LIGHTER

Original Filed Oct. 19, 1932

Fig. 1.

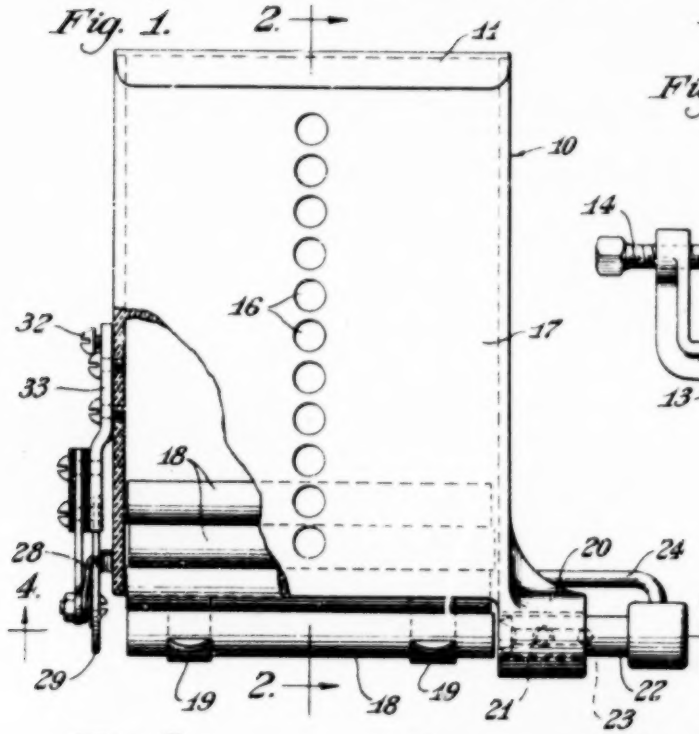


Fig. 2.

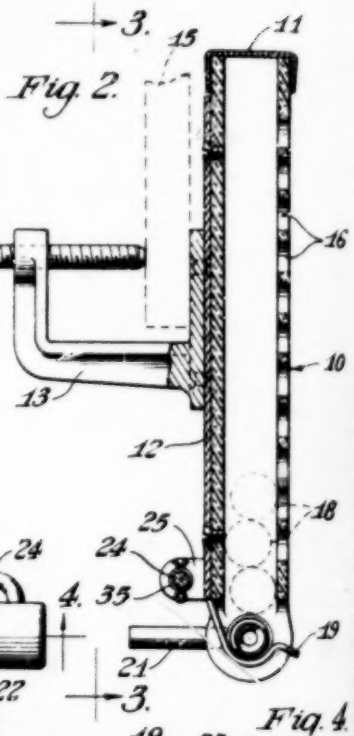


Fig. 3.

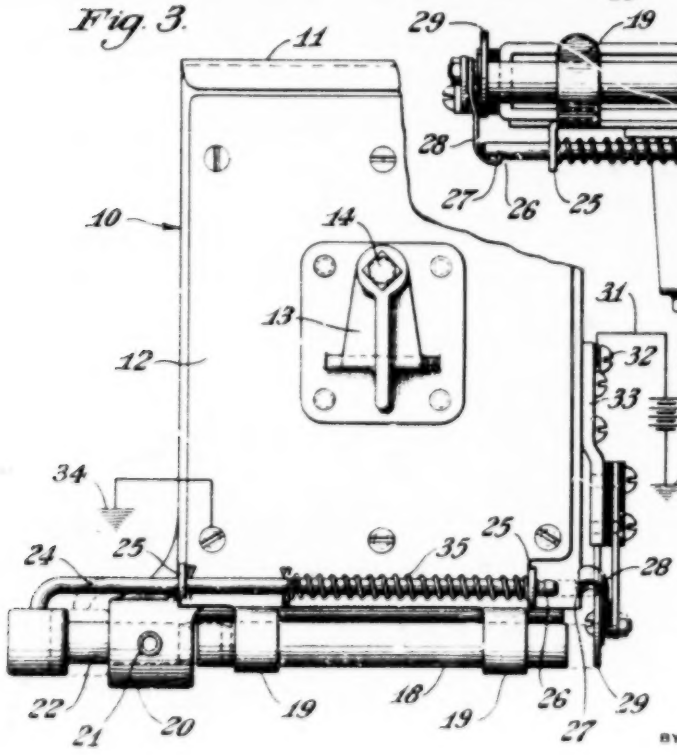


Fig. 4.

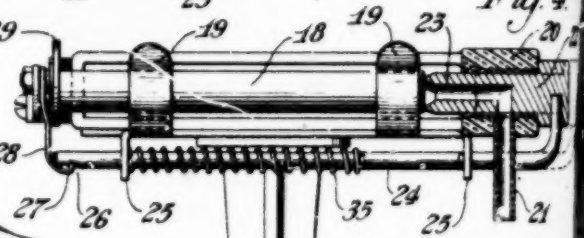
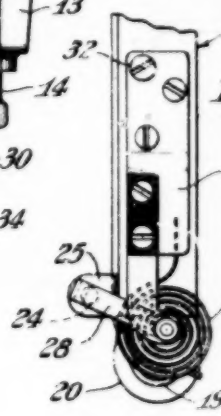


Fig. 5.



Ben Dess, INVENTOR

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ATTORNEYS

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CIGARETTE LIGHTER

Ben Dess, Chicago, Ill.

Application October 19, 1932, Serial No. 638,645
Renewed March 27, 1935

4 Claims. (Cl. 219—32)

This invention relates to certain novel improvements in cigarette lighters, and has for its principal object the provision of an improved construction which will be highly efficient in use and economical in manufacture.

This invention relates to a cigarette lighter for automotive vehicles. Cigarette lighters of the general type to which this device pertains comprise, broadly, a suction line, having a control valve therein, and an igniting element. In the use of these devices the valve controlling the suction line is customarily manipulated with one hand by the vehicle driver to register one end of the cigarette with the suction line and to abut the other end of the cigarette against the igniting element. Heretofore made these devices have necessitated that the driver again manipulate either the suction line control valve or a switch to open circuit to the igniting element, and in some cases to manipulate both the valve and the switch, after the cigarette has been ignited. This construction of the prior art devices has necessitated a considerable manipulation of the same and has required that the driver of the vehicle have at least one hand off from the steering wheel for a considerable length of time in order to set the device in operation and once to shut it off. It is obvious, of course, that it is not desirable for the driver to remove one hand from the steering wheel any longer than is necessary, as doing so increases the likelihood of accident.

It is, therefore, the primary object of this invention to provide a new cigarette lighter which will eliminate the above-recited disadvantage of the prior art devices, and which will automatically shut off the suction line and open circuit to the heating element or igniter after the cigarette has been ignited, so that it is only necessary for the vehicle driver to keep one hand removed from the steering wheel of the vehicle long enough to start the device in operation and to remove the lighted cigarette therefrom.

Another object resides in the provision of a novel latching mechanism including a temperature responsive element which holds the suction valve open and the heating element circuit closed until after the igniter or heating element has reached a predetermined temperature and the cigarette is ignited, whereupon the temperature responsive element of the latching mechanism automatically opens circuit to the heating element and shuts off at the same time releasing the suction line valve which then cuts off the suction line.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawing, showing the preferred form of construction and in which:

Fig. 1 is a front elevational view of the new lighter, showing a part of the cigarette magazine casing broken away;

Fig. 2 is a sectional view on line 2—2 in Fig. 1;

Fig. 3 is a rear elevational view on line 3—3 of Fig. 2, showing a part of the magazine casing broken away;

Fig. 4 is a view on line 4—4 in Fig. 1, partly in section and partly in bottom plan; and

Fig. 5 is a fragmentary side elevational detail view.

In the drawing 10 generally indicates a cigarette magazine casing which has an open top over which is arranged a closure member 11. While this magazine casing may be made of any suitable material such, for example, as aluminum, I prefer to make it of an electrically non-conductive material such as, for example "bakelite". Attached to the rear wall 12 of the magazine casing 10 is a bracket 13 which carries a clamping screw 14, and by means of this bracket and screw the device may be mounted on a suitable support such as the dash 15 of an automotive vehicle. Preferably a vertical row of sight openings 16 is provided in the front wall 17 of the casing 10 so that the vehicle driver may determine when the supply of cigarettes 18 in the casing is running low and needs replacement. The container has an open bottom so that the cigarettes feed one at a time by gravity down onto the cradle arms 19 which are attached to the rear wall 12 of the casing and project under the open bottom thereof.

There is formed on one side wall of the casing 10 a hollow boss in the form of a ring 20, and opening into this boss 20 is the tubular end 21 of a suction line (not shown in full) but adapted to be connected to the intake manifold of the vehicle motor in a conventional manner. A movable valve element 22 is slidably mounted in the boss 20 (Fig. 4) and this valve has a passage 23 formed therein. This passage 23 is shown out of registration with the end 21 of the suction line, in Fig. 1, and the device is, of course, in this position of the parts, ineffective to ignite the cigarette 18 that is held in the cradle arms 19. But assuming that the vehicle driver desires to light the cigarette 18 held in the cradle arms 19; he then presses the valve element 22 inwardly, or to the left (Fig. 1), which moves this valve element

into the position of Fig. 4 and registers the passage 23 with the end 21 of the suction line while at the same time the inner end of the passage 23 is abutted against one end of the cigarette 18 held in the cradle arms 19 and the cigarette is moved to the left (Fig. 1) so as to abut its other end against the heating element 29.

There is attached to the valve element 22 a latch arm 24 that extends across the back wall 12 of the casing, near the bottom thereof; this latch arm 24 being slidably mounted in brackets 25 that project from the rear wall 12 of the casing. Formed in this latch arm 24 is a detent 26, and when the valve element 22 is slid to the left (Fig. 1), this latch arm 24, being attached to the valve element 22, is also slid to the left (Fig. 1), or to the right (Fig. 3), against the action of a spring 35 arranged thereon; and the detent 26 is thus engaged with an angled or hooked end portion 27 of a temperature responsive element 28 which is electrically connected to the heating element 29 that is insulatingly mounted on the left hand side wall of the casing 10, as seen from the front (Fig. 1). Thus the detent 26 is engaged with the hooked or angled end portion 27 of the temperature responsive element 28 and the arm 24 is latched in its position of Fig. 4, thereby holding the inner end of the passage 23 in the valve element 22 against one end of the cigarette held by the cradle arms 19; holding the passage 23 in registration with the the end 21 of the suction line to keep the suction line open; and at the same time holding the other end of the cigarette in contact with the heating element 29, circuit through which is closed, by the engagement of detent 26 and angled end 27 of the temperature responsive element 28, as follows: From the battery 30, through a conductor 31 to a terminal post 32 which is mounted on a conductive strip 33 that is attached to the casing 10; and to the heating element 29; through the strip 33 and heating element 29; through the temperature responsive member 28 and arm 24 to the ground which completes the circuit; the casing 10 and battery 30 being grounded as at 34 through the body of the vehicle.

The temperature responsive element 28 of the latching mechanism is preferably of the bimetallic type and after the heating element has been active a predetermined length of time sufficient to ignite the cigarette, the hooked or angled end portion 27 of the temperature responsive element 28 expands away from the detent 26 in the arm 24, thereby releasing the arm 24, which is then returned by the tensioned spring 35 to the right (Fig. 4).

This movement of the arm 24 also moves the valve element 22, and the passage 23 in the latter is thus moved out of registration with the tubular end 21 of the suction line, which is thus cut off; while at the same time the disengagement of the hooked end portion 27 of the temperature responsive element from the detent 26 of arm 24 opens the circuit to the igniter or heating element 29. The suction line is thus automatically cut off and the circuit to the heating element opened after the cigarette in the cradle arms 19 has been ignited, so that in the use of the device it is merely necessary for the vehicle driver to manipulate the valve element 22 and its arm 24 (to the left, Fig. 1) to open the suction line and turn on the igniter, wait until the cigarette is ignited, and then remove the ignited cigarette from the cradle arms 19. It is thus unnecessary for the vehicle driver in the use of the device to manipulate the parts back into position to close the suction line and open circuit to the igniter, as has been necessary in the prior art devices, and, therefore, the danger incidental to having one hand removed from the steering wheel of the vehicle is minimized by the use of the new device.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification, without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to protect by Letters Patent is:

1. A cigarette igniting device comprising the combination of a suction line and a control valve therein including a movable element, a circuit including an igniting element, and a latching mechanism for holding the suction line open and the circuit closed a sufficient length of time to effect the igniting of a cigarette, said latching mechanism including a member attached to the movable valve element and including a temperature-responsive element arranged in the circuit in close proximity to the igniting element and having a portion releasably latchable to said member by movement of the latter and said movable valve element toward the igniting element.

2. A cigarette igniting device comprising the combination of a cigarette support and a magazine from which the cigarettes may be fed one at a time onto the support, an electric circuit including an igniting element arranged at one end of the support, a suction line having a control valve therein arranged at the other end of the support the valve including an element movable toward and from the igniting element and having a passage formed therein for registration at one end with the suction line and at the other end with one end of a cigarette disposed on the support, and a latching mechanism for holding the control valve open and the circuit closed a sufficient length of time to effect the igniting of a cigarette, said latching mechanism including a member attached to the movable valve element and including a temperature-responsive element arranged in the circuit in close proximity to the igniting element and having a portion releasably latchable to said member by movement of the latter and said valve element toward the igniting element.

3. A cigarette igniting device comprising the combination of a cigarette support and a magazine from which the cigarettes may be fed one at a time onto the support, an electric circuit including an igniting element arranged at one end of the support, a suction line having a control valve therein arranged at the other end of the support and the valve including an element movable toward and from the igniting element and having a passage formed therein for registration at one end with the suction line and at the other end with one end of a cigarette disposed on the support, a latching mechanism for holding the control valve open and the circuit closed a sufficient length of time to effect the igniting of a cigarette, said latching mechanism including a member attached to the movable valve element and including a temperature-responsive

ment arranged in the circuit in close proximity the igniting element and having a portion re-ably latchable to said member by movement the latter and said valve element toward the iting element, and a spring urging said mem-r out of latching engagement with the tem-rature responsive element and urging the mov-le valve element in a direction away from the iting element and into position to close the tion line.

4. A cigarette igniting device comprising the bination of a suction line and a control valve gain including a movable element, a circuit cluding an igniting element, and a latching chanism for holding the suction line open and the circuit closed a sufficient length of time to effect the igniting of a cigarette, said latching mechanism including a member attached to the movable valve element and including a temperature-responsive element arranged in the circuit in close proximity to the igniting element and having a portion releasably latchable to said member by movement of the latter and said movable valve element toward the igniting element, and a spring urging said member out of latching engagement with said temperature-responsive element and urging said valve element into position to close said suction line.

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May 10, 1938.

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J. H. COHEN

CIGAR LIGHTER

Filed March 29, 1933

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Fig. 1

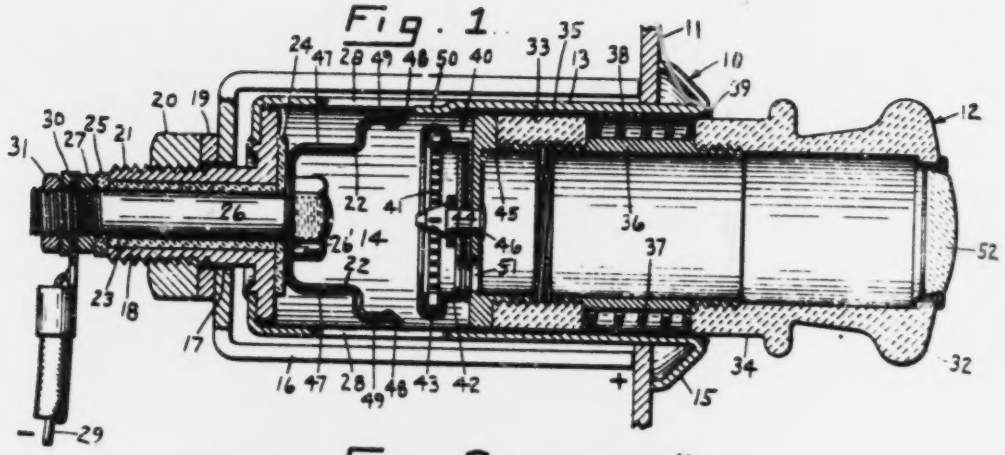


Fig. 2

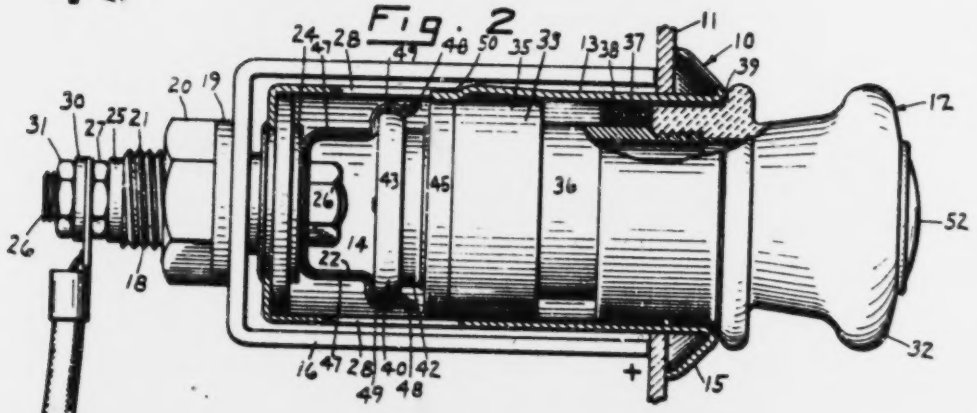


Fig. 3

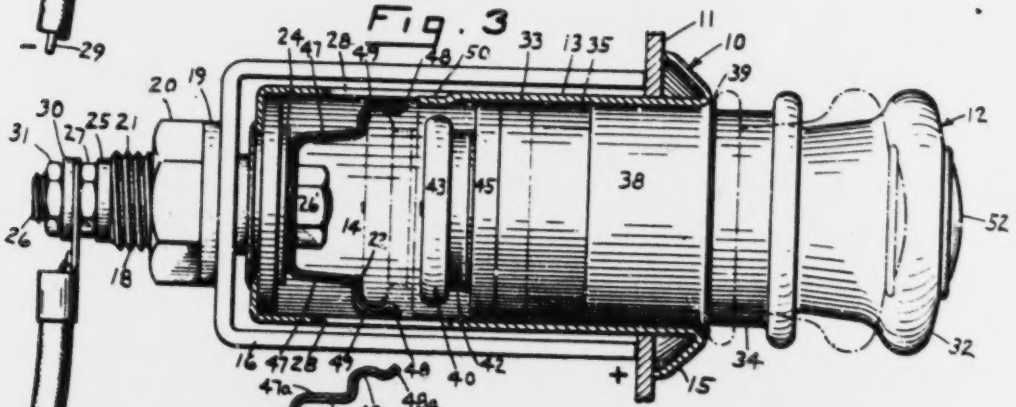
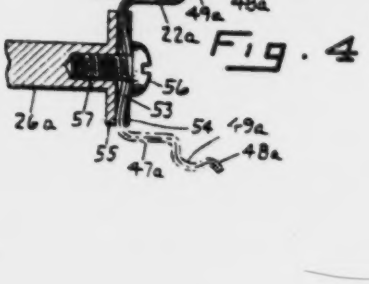


Fig. 4



INVENTOR

BY Joseph H. Cohen

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Patented May 10, 1938

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UNITED STATES PATENT OFFICE

2,117,232

CIGAR-LIGHTER

Joseph H. Cohen, Bridgeport, Conn., assignor to Automatic Devices Corporation, Bridgeport, Conn., a corporation of Connecticut

Application March 29, 1933, Serial No. 663,402

23 Claims. (Cl. 219—32)

This invention relates to electric cigar-lighters, and more particularly, to devices of this character for use with automobiles, although it is applicable for home, office and other similar use. More specifically, it is an improvement over that form of automatically controlled cigar-lighter shown in my copending application Serial No. 624,193, filed July 23, 1932.

In my aforesaid application, I have disclosed a cigar-lighter with novel forms of structure adapted to normally support the removable igniting unit in an inoperative position in a socket and arranged to maintain a circuit controlling interponent in an energizing position until the igniting unit is heated a predetermined extent, whereupon thermostatic means releases the interponent and allows it to move the removable igniting unit back into the inoperative position in the socket again.

It is an object of the present invention to provide a cigar-lighter having many of the advantages of my aforesaid invention just described, but which will be simpler mechanically, more economical to manufacture and more positive and fool-proof in its action.

A feature of the present invention is the provision of a cigar-lighter which may be applied to its base with a straight and natural longitudinal movement and moved from an inoperative position to an operative or energizing position on the base with the same natural straight line movement. Also, a novel thermostatic control arranged to catch the removable igniter unit directly and hold it in energizing position for a predetermined period.

Another feature is the provision of a catch on the stationary member of the cigar-lighter having a direct mechanical and electrical connection with the heater element portion of the removable igniting unit to be advantageously heated directly by both radiation and convection.

A further feature is the provision of a novel arrangement for varying the degree of heat given to the resistance element and to compensate for wear of parts.

Yet another feature is the provision of a thermostatic detent adapted to catch and hold the removable igniting unit directly in an energizing position deep in a socket against spring pressure until property heated and then release it for partial ejection from the socket for use, and for safety clearance from the feeder contacts. This feature of construction is also arranged to give a mechanical click or knock to audibly warn the operator that the device is heated and ready for use.

Other features and advantages will hereinafter appear.

In the drawing—

Figure 1 is a completely cross section view taken axially through the center of the device, with the removable igniting unit at the inoperative position in the stationary member.

Fig. 2 is a view similar to Fig. 1, with fewer parts in cross section, and with the igniting unit in the energized position.

Fig. 3 is a view similar to Fig. 2, but shows the catch in its expanded position and the removable igniting unit moved back again to its inoperative station in the socket.

Fig. 4 is a detail view of a modified form of thermostatic contact.

The cigar-lighter selected for illustrating the present invention is of the so-called sleeve type for use with automobiles and comprises a base member 10 for attachment to a panel 11 of an automobile, and a removable igniting unit 12 which is normally supported by the base member, but which may be mechanically and electrically disconnected for manual transportation within the car and for handling by various occupants therein for the purpose of lighting cigars, cigarettes and the like.

The base member 10 comprises a sleeve 13 forming a deep socket 14 adapted to pass through a suitable aperture in the instrument panel 11 until a flange 15 on the front end thereof engages with the instrument panel. It is held in this position on the panel by a U-shaped yoke 16 having an aperture 17 passed over a contact sleeve 18 at the bottom of the socket 14 where it is tightened in position and the flange 15 portion of the socket 14 drawn firmly into engagement with the panel 11 by a washer 19 and nut 20 run up and tightened on the thread 21 portion of the contact sleeve 18.

The U-shaped yoke, in addition to clamping the base member in place, serves through the washer 19, nut 20 and sleeve 18 to conduct grounded current to the socket 14 if the flange 15 seating on the front face of the panel 11 fails in this function.

The base member also supports and carries an insulated contact 22. This contact, in its present preferred form, is insulated from the socket by a collar 23 passing through a bore of the sleeve 18 and insulating washers 24 and 25 at the front and rear ends of the sleeve, and it is held in place on a shouldered stud 26 by a nut 26' and is then

passed through the insulating members just described where it is rigidly secured with a primary nut 27. This primary nut serves to locate and hold the contact 22 relative to the socket 14 so that the contact cannot rotate within the socket and inadvertently move away from clearance slots 28 in the side of the socket and harmfully engage with the sleeve 13 carrying an opposite pole of the circuit.

A feed wire 29 is connected to the stud 26 and is secured to the latter by a washer 30 and secondary nut 31. Thus, the base member is provided with members (the socket 14 and contact 22) terminating both sides of a car circuit which are insulated from each other.

The removable igniting unit 12 comprises a knob or handle 32, and a plunger section 33 adapted to slidingly fit into the socket 14 and support the igniting unit therein. This plunger section comprises a shoulder 34 on the knob 32 and an aligning sleeve 35 spaced forwardly therefrom by a threaded and shouldered collar 36. It should be particularly noted that this structure forms a support for a spring 37 and sleeve 38, the latter being provided with a flange 39 adapted to engage the front of the socket 14 and limit movement into the socket while the spring 37 normally urges the knob section of the igniting unit rearwardly with respect to the collar in order to prevent the igniting unit from engaging with the fixed contact in the base member if the unit is initially mounted into the socket and yet adapted to yield and permit the unit to be moved forwardly by conscious effort.

The igniting unit 12 is completed with a heater unit 40 preferably having a threaded connection with the auxiliary sleeve 35 which is made of insulation in order to properly insulate the heater unit from electrical connection with the base member 10 and with the spacing sleeve 36 portion of the igniting unit. This heater unit comprises a resistance element 41 in the form of a spirally wound band supported in and connected at its outer end to a metal cup 42 where it is secured in place with an overlapping ring 43, and is at its other end supported by and connected to a centrally disposed stud 44 which passes through the cup 42 and a threaded sleeve 45 and rigidly secured in place by the headed section 46 thereof. The stud 44 provides an electrical connection between the threaded sleeve 45 and the inner end of the spirally wound resistance element, but is insulated from the cup 42 and other end of the resistance element by three washers best seen in Fig. 1.

Now, it should be particularly noted that the stationary contact 22 on the base member 10 is made of bimetallic strips so as to be thermally responsive and expand upon heating, and is arranged to normally embrace the heater unit and thereby hold the igniting unit in the socket 14. To this end it is preferably provided with two fingers 47 at opposite sides of the center and spaced wide apart. Also, the fingers are of substantial length in order to provide considerable resiliency. These fingers are at their outer ends provided with a bevel 48 adapted to be engaged by the collar 43 on the heating unit 40, and are provided with a concave notch 49 conforming substantially with the contour of the collar 43. The shape of these parts and the relationship between the fingers 47 and collar section 43 of the heating unit 40 is such that the fingers are first spread apart by the collar as the igniting unit is moved rearwardly in the socket 14, until the concave notches snap over the collar and hold the igniting unit in the back position within the socket as shown in Fig. 2, the resiliency of the contact fingers 47 and holding strength of the concave notches being stronger than the pressure of the compressed spring 37 while the igniting unit is initially in the back position.

In this back position current is transmitted from the ungrounded stationary contact 22 through the collar 43 to the outer end of the resistance element 41 while the grounded circuit in the base member is transmitted to the resistance element through a spring finger 50 preferably lanced from the side of the sleeve 13, engaging the outer wall of the threaded sleeve 45 and through the latter and the stud 44 passed to the inner end of the resistance element, whereupon the resistance element is gradually brought to incandescence for the purpose of cigar and cigarette lighting.

As the resistance element is brought to incandescence, heat is passed to the collar 43, thence to the ends of the fingers 47 for direct mechanical transmission of heat and is also radiated substantially against the fingers whereupon the thermally responsive bimetallic strips, comprising the contact 22, begin to expand and gradually carry the concave notches 49 on the arms 47 out of engagement with the collar 43 portion of the igniting unit, the parts being so proportioned that the contact 22, when cold, catches and holds the igniting unit 12 back into the energizing position until the resistance element is brought to a white heat or to another predetermined degree of incandescence. Thereafter the contacts and the catch formed thereby releases its hold upon the igniting unit and the spring 37 and sleeve 38 assembly on the igniting unit quickly moves the latter to the back inoperative position shown in Fig. 3.

The degree of incandescence may also be indicated to an operator by the provision of several aligned holes in the cup 42, insulating washers and threaded sleeve 45, as shown at 51 in Fig. 1, which permit light rays to pass through the bore of the igniting unit and rearwardly through the disk 52 which is preferably made of catalin or other light ray conducting material.

Operation of the device is as follows:

The removable igniting unit 12 is normally moved into the socket 14 to the inoperative position shown in Fig. 1 where the flange 39 on the spring sleeve 38 engages the flange 15 of the socket. The parts are so arranged that the unit moves easily into this position and special effort is required to move it deeper into the socket after the flange engages the shoulder. Thus, the operator releases the removable igniting unit after it is properly located in the socket in the normal rest or inoperative position.

When it is desired to energize the removable igniting unit, the operator merely presses the igniting unit deeper into the socket 14 in a straight line direction and without rotation or special aligning effort against the pressure of the spring 37 until the collar 43 on the heating element 40 spreads the ends of the two spring contact fingers 47 apart and deep enough so that the concave notches 49 snap over the collar to hold the igniting unit in the back or operative position deep in the socket for energization by the contacts 22 and 50 cooperating with the collar 43 and threaded sleeve 45. The operator may, with the present invention, immedi-

...dy take his hand away from the igniting unit ...in and grasp the wheel, gear shift lever, or ...her part of the car again for efficient and regu... operation of the car, rather than holding the ...iting unit in place as with the usual type of ...hter while the resistance element 41 is being ...ated to incandescence for use.

At the same time, the heating unit 40, by convection and radiation as hereinbefore described, heats the thermally responsive contact 22 and causes the two arms 47 to spread apart slowly as the heating unit is being brought to the proper degree of incandescence. When properly heated, the notches 41 clear the collar 43 and allows the spring 37 to push the igniting unit outwardly with respect to the socket 14 and thereby hold the contacts on the heating unit 40 clear of the feeder contacts 22 and 50 on the base 10. In this latter movement, there is a snap noise as the flange on the spring sleeve 38 engages the back wall of the auxiliary sleeve 35 which will be heard by the operator to warn him that the removable igniting unit is satisfactorily heated and ready for use and that it should be used without delay while the heating unit is incandescent.

Thus, the present invention provides a simple automatic control, which, in effect, grasps and holds the removable igniting unit itself in energizing position until it is properly heated and thereupon releases it and automatically moves it out of electrical connection after it is properly heated into a position of safety with respect to the feeder contacts on the base, thereby minimizing the possibility of excessive drain on the battery or other source of current. The direct mechanical connection between the heating unit and the bimetallic contact provides an economical structure, and, more particularly, provides a construction which is direct and highly responsive to the heating of the resistance element. Furthermore, the contact 22 which forms the catch receives heat directly by convection and radiation from the resistance element.

In Fig. 4 there is shown a modified form of combined catch and contact 22a comprising a bimetallic strip which is substantially similar to the preferred form shown in Figs. 1 to 3. It is, however, provided with a bowed base 53 adapted to fit into a slot 54 across the head 55 of a bolt 56a in order to prevent relative turning and is held on the bolt by a screw 56 passing through the base 53 and having a threaded connection 57 with the bolt. This contact is also provided with a pair of arms 47a having bevels 48a and concave notches 49a to receive the removable igniting unit 12 in much the same manner as the first form of contact hereinbefore described. However, this modified form of contact has the advantage of making it possible to easily and quickly change the pressure of the catch on the removable igniting unit and thereby increase or decrease the degree of incandescence before release is effected by simply tightening the screw 56 and thereby flattening the bowed base of the contact and at the same time moving the fingers 47a toward each other to increase the pressure and by loosening the screw allowing the bowed portion to move outwardly again while the fingers likewise spread outwardly in order to decrease the pressure of the catch on the igniting unit and thereby effect a quicker release. This adjustment is particularly advantageous in order to compensate for any stretch or wear of the contact from continuous use or from constant heating and cooling. The adjustment may be easily effected by simply inserting a screw driver into the socket and turning the screw 56 in the desired location.

Both forms of the invention have the advantage of partially ejecting the igniting unit from the base into a more convenient position for complete removal, and, at the same time, the partially ejected relative location of these parts provides an auxiliary warning to the operator that the igniting unit is in condition for use if he fails to hear the mechanical click of the igniting unit as it is ejected to the back position or if he hears some extraneous click which he thinks is the cigar-lighter, for in the latter situation the igniting unit would still be in the deep position and visually indicate to the operator that it is not yet properly heated.

If preferred, the contact member 22 or 22a may be made with but a single finger 47 or 47a respectively by omitting the finger as shown with dot-and-dash lines in Fig. 4.

The broader aspects of the invention herein disclosed are described and claimed in my copending applications Serial No. 624,193, filed July 23, 1932, and a division thereof, Serial No. 118,838, filed January 2, 1937.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters Patent, is:—

1. In an electric cigar-lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally manually slidable in said socket from a shallow inoperative to a deep operative position; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position; cooperating contacts on the igniting unit and the base member respectively, adapted to engage when the igniting unit is in said deep operable position and disengage when in said shallow inoperative position, one of the contacts on the base member extending into the path of movement of one of the contacts on the igniting unit so that said contacts are maintained in good electrical engagement by the tendency of the igniting unit to move toward inoperative position; and a spring detent adapted to catch and releasably hold the igniting unit deep in the socket in the operative position against the pressure of said yielding means and as a result of said longitudinal movement of the igniting unit to said operative position.

2. In an electric cigar-lighter, the combination of a base member; a socket on the base member; a removable plug manually longitudinally slidable in said socket to a shallow inoperative position and into a deep operative position; a heating coil on said removable plug; yielding means normally urging said removable plug longitudinally from said deep operative position to said shallow inoperative position; cooperating contacts on the igniting unit and the base member respectively, adapted to engage when the igniting unit is in said deep operable position and disengage when in said shallow inoperative position, one of the contacts on the base member extending into the path of movement of one of the contacts on the igniting unit so that said contacts are maintained in good electrical engagement by the tendency of the igniting unit to move toward inoperative position; and a thermally responsive catch adapted to hold said plug in the deep operative position normally and to release said plug when

said heating coil is energized a predetermined extent, whereupon said yielding means ejects said plug longitudinally from the deep operative position to the shallow inoperative position, said catch being rendered operative as a result of the longitudinal movement of the igniting unit into said operative position.

3. In an electric cigar-lighter, the combination of a base member; a socket in the base member; a removable igniting unit including a spacing sleeve with a knob and collar secured thereto forming shoulders at opposite ends thereof; and yielding means, including a spring and sleeve on said spacing collar between the two shoulders, forming a support for the removable igniting unit in said socket normally in a back inoperative position and yieldable to permit forced travel of the igniting unit deeper into the socket to an operative position.

4. In an electric cigar-lighter, the combination of a base member; a socket in the base member; an escutcheon flange on the base member; a removable igniting unit including a spacing sleeve with a knob and collar secured thereto and forming shoulders at opposite ends thereof; and yielding means, including a spring and sleeve having a flange engaging the escutcheon flange on said spacing collar between the two shoulders, forming a support for the igniting unit in said socket normally in a back inoperative position and yieldable to permit forced travel of the movable igniting unit deeper into the socket to an operative position.

5. In an electric cigar-lighter, the combination of a base member; a removable plug supported by said base member; a heating element on said plug; and a thermostatic catch on the base member directly engaging the heating element for locking the plug in the base member until the heating element is heated a predetermined extent.

6. In an electric cigar-lighter, the combination of a stationary base member; a plug adapted to be removably supported in said base; a heating element on said plug; yielding means normally urging the plug member away from the base member; and a thermostatic catch on the base member directly engaging the heating element adapted to lock the plug member in the base member against the pressure of the yielding means and adapted to release and allow the plug to be moved away from the base member under the influence of the yielding means when the heating element is heated a predetermined extent.

7. In an electric cigar-lighter, the combination of a base member; a removable plug supported on the base member and movable longitudinally thereon into operative and inoperative positions; an electrical heating coil on said plug; a ferrule surrounding the coil, and a thermostatically controlled catch for locking said plug in its operative position longitudinally and adapted to release automatically so that the plug may return to its inoperative position longitudinally when said coil is heated a predetermined extent, said catch comprising a bimetallic detent adapted to snap over the ferrule and thereby lock the plug in operative position.

8. In an electric cigar-lighter, the combination of a base member; a socket in the base member; a plurality of contacts of opposite polarity on the base member; a removable igniting unit; a plurality of contacts of opposite polarity on the igniting unit, said igniting unit having a free sliding fit into a shallow inoperative position in the socket where the plurality of contacts on the said igniting unit are entirely free of the said contacts on the base member; yielding means adapted to permit forced movement of the igniting unit deeper into said socket to an energizing position where said plurality of contacts on the base member and said plurality of contacts on the igniting unit are brought into cooperating engagement and a thermostatic catch for holding said igniting unit in the energizing position for a predetermined period of time.

9. In an electric cigar-lighter, the combination of a base member; a socket in the base member; a stationary contact in the base member; a combined thermostatic catch and contact in the base member; a removable igniting unit; a plurality of contacts on the igniting unit; a stop on the igniting unit for limiting free sliding movement of the igniting unit into a shallow position in the socket, where the two contacts on the latter are entirely free of the two contacts on the base member; and yielding means necessitating forced travel of the igniting unit deeper into the socket into an energizing position where the contacts on the base member and on the igniting unit cooperate, and where the combined catch and contact on the base member holds the igniting unit in the energizing position until the igniting unit is properly heated.

10. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidable in said socket to a shallow inoperative position and a deep operative position; a heater element carried by said plug; a pair of contacts associated with the heater element; a plain contact on the base member engaging one of the contacts of the heater element; and a bimetallic combined contact and catch adapted to engage the other contact of the heater element in close proximity thereof so as to be heated directly by radiation and conduction from the heater element.

11. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidable in said socket to a shallow inoperative position and a deep operative position; a heater element carried by said plug; a pair of contacts associated with the heater coil; a plain contact on the base member engaging one of the contacts of the heater element; and a contact having a bimetallic spring arm with a notch adapted to catch and hold the other contact on the heater element and in close proximity thereof so as to be influenced directly by radiation and conduction of heat from the heater element.

12. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidably movable in said socket to a shallow inoperative position and a deep operative position; means for partially ejecting the plug from the socket; a heater element carried by said plug; a pair of contacts associated with the heater coil; a plain contact on the base member engaging one of the contacts of the heater coil; a bimetallic catch and contact including a plurality of yielding arms thermally influenced by said heater element; notches in said arms adapted to catch and hold said removable plug in the deep operative position of the socket; and means for varying the spacing between said arms to vary the pressure with which they catch the removable plug, in order to control the degree of incandescence of the heater coil prior to release

the notches from the heater element and the ejection of the removable plug.

13. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidably movable in said socket to a shallow inoperative position and a deep operative position; means for partially ejecting the plug from the socket; a heater element carried by said plug; a pair of contacts associated with the heater coil; a plain contact on the base member engaging one of the contacts of the heater coil; a bimetallic contact for engaging the other contact on the heater coil and being thermally responsive thereto including an arm with a notch adapted to engage and hold said removable plug in the deep operative position; and means for varying the pressure with which said arm engages and holds said removable plug to effect a predetermined energization of the heater coil.

14. In an electric cigar-lighter, the combination of a base; a socket in the base; a removable plug slidably movable in said socket to a shallow inoperative position and a deep operative position; means for partially ejecting the plug from the socket; a heater element carried by said plug; a pair of contacts associated with the heater coil; a plain contact on the base member engaging one of the contacts of the heater coil; a bimetallic contact for engaging the other contact on the heater coil and being thermally responsive thereto including an arm with a notch adapted to engage and hold said removable plug in the deep operative position; a bowed base on said bimetallic contact; and screw means for flattening said bowed base and thereby varying the pressure with which said arm engages and holds said removable plug to effect a predetermined energization of the heater coil.

15. In an electric cigar lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally slidable in the socket into a shallow inoperative position and a deep operative position; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position; a heating element on the inner end of the igniting unit and having a projecting flange; and a spring detent adapted to engage said flange on the heating element and releasably holding the latter and the igniting unit deep in the socket into operative position against pressure of said yielding means and as a result of said longitudinal movement of the igniting unit to said operative position.

16. In an electric cigar-lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally manually slidable in said socket from a shallow inoperative to a deep operative position; a heating element carried by said igniting unit; cooperating contacts on the base and igniting unit respectively for energizing said heating element only when the igniting unit is in said deep operative position, one of the contacts on the base member extending into the path of movement of one of the contacts on the igniting unit; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position and deenergizing the heating element, said forcing means by tending to move the igniting unit toward shallow position causing said cooperating contacts to maintain good electrical engagement when the igniting unit is in energizing position; and means operable to engage and detain the igniting unit in its deep operative position against the pressure of said yielding means when the said unit is manually moved to said position while it is below an intended temperature and also operable to nondetaining relation to said unit when the latter is heated to said temperature so as then to allow said yielding means to move the unit to its shallow inoperative position.

17. A lighter as defined in claim 16, wherein the means last-mentioned includes a thermostat.

18. In an electric cigar-lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally manually slidable in said socket from a shallow inoperative to a deep operative position; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position; and means operable to engage and detain the igniting unit in its deep operative position against the pressure of said yielding means when the said unit is manually moved to said position while it is below an intended temperature and also operable to nondetaining relation to said unit when the latter is heated to said temperature so as then to allow said yielding means to move the unit to its shallow inoperative position, the means operable to engage the igniting unit including a metallic thermostat itself shaped to provide a spring catch engageable with said unit when the unit is manually moved to deep operative position and the unit is below said intended temperature.

19. In an electric cigar-lighter, the combination of a stationary base member; a socket in the base member; a removable igniting unit longitudinally manually slidable in said socket from a shallow inoperative to a deep operative position; yielding means normally forcing said igniting unit from said deep operative position to said shallow inoperative position; and means operable to engage and detain the igniting unit in its deep operative position against the pressure of said yielding means when the said unit is manually moved to said position while it is below an intended temperature and also operable to nondetaining relation to said unit when the latter is heated to said temperature so as then to allow said yielding means to move the unit to its shallow inoperative position, the means operable to engage the igniting unit including a thermostat, the igniting unit including a carrier for the heating element thereof, and said carrier being engaged by the means which includes the thermostat when said means detains the igniting unit in its deep operative position.

20. In a cigar-lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to solely bodily movement of the igniting unit and heating element toward the holder to close a current supply circuit, including the heating element, to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit outwardly of the holder when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said temperature responsive means being metallic and constituting a part of the current supply circuit including an electric current supply contact having a surface to normally engage and disengage the heating element directly and being movable to open the circuit when the heating element attains said predetermined heat; and means for electrically

connecting said heating element to said temperature responsive means when the latter is in circuit-opening position to again close the circuit whereby the temperature of the heating element may be raised above said predetermined temperature.

21. In a cigar-lighter of the removable type, a holder; an igniting unit movably mounted on the holder and including a heating element; means responsive to movement of the igniting unit and heating element on the holder from a normal open circuit position to close a current supply circuit, including the heating element, to heat the latter for use; means, including means responsive to the temperature of the heating element, for moving the igniting unit on the holder to normal position when the heating element attains a predetermined temperature to open the current supply circuit leading to the heating element, said temperature responsive means being metallic, engaging directly the heating element and constituting a part of the current supply circuit and being movable to open the circuit when the heating element attains said predetermined heat; and means for electrically connecting said heating element to said temperature responsive means when the latter is in circuit-opening position to again close the circuit whereby the temperature of the heating element may be raised above said predetermined temperature.

22. In a cigar lighter, the combination of a socket; an igniting unit mounted in said sock for complete removal and replacement; a heati element on the inner end of said igniting u and including a resistance wire and an annul contact connected thereto and closely thermal encircling said resistance wire; a contact fing in the socket to directly engage the annular co tact on the heating element and be heated ther by; and means completing an energizing circu through said resistance wire, said contact fing being heat-responsive so as to electrically dise gage said annular contact when the said resi ance wire is brought to a desired degree of candescence.

23. In a cigar lighter, the combination of socket; an igniting unit mounted in said sock for complete removal and replacement; a he ing element on the inner end of said igniting u and including a resistance wire and an annu contact connected thereto and closely therma encircling said resistance wire; a contact finger the socket to directly engage the annular cont on the heating element and be heated there and means completing an energizing circ through said resistance wire, said contact fing being bimetallic and heat-responsive so as t electrically disengage said annular contact wh the said resistance wire is brought to a desire degree of incandescence.

JOSEPH H. COHEN.

May 17, 1938.

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J. H. COHEN

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CIGAR LIGHTER

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Fig. 1

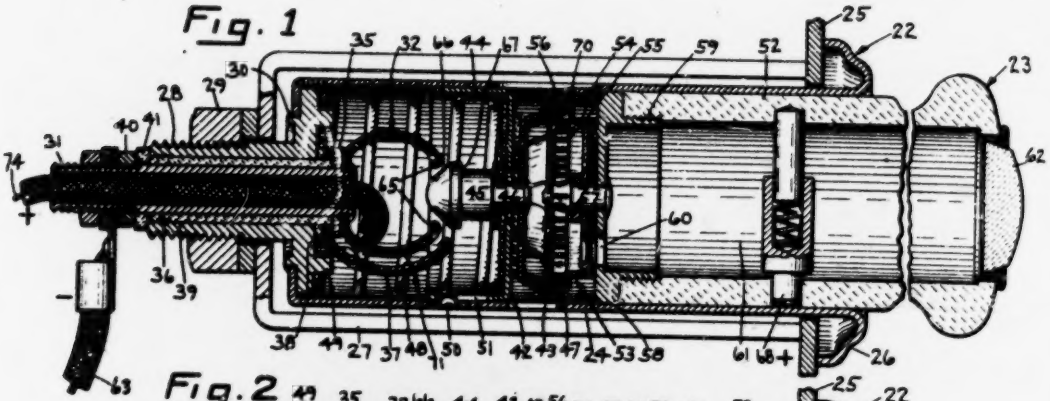

Fig. 2

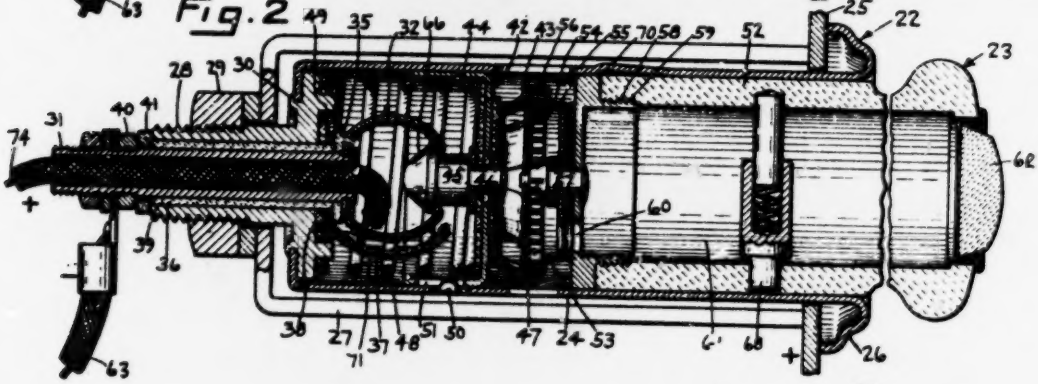

Fig. 3

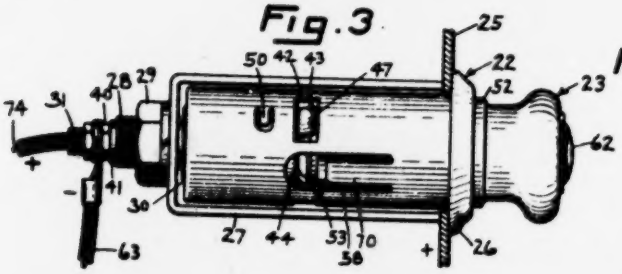

Fig. 4

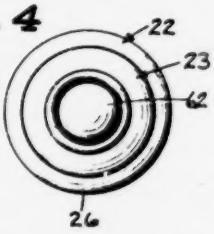

Fig. 5

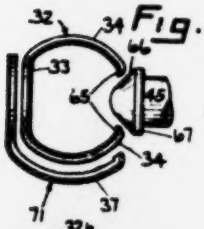

Fig. 6

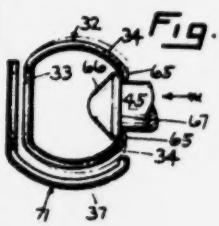

Fig. 7

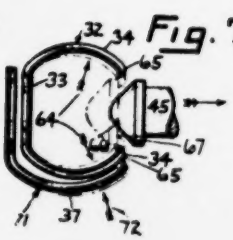

Fig. 8

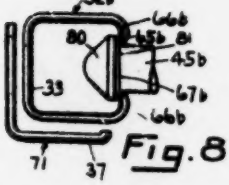

Fig. 20

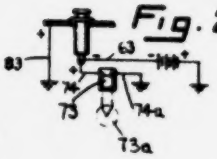

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Fig. 9

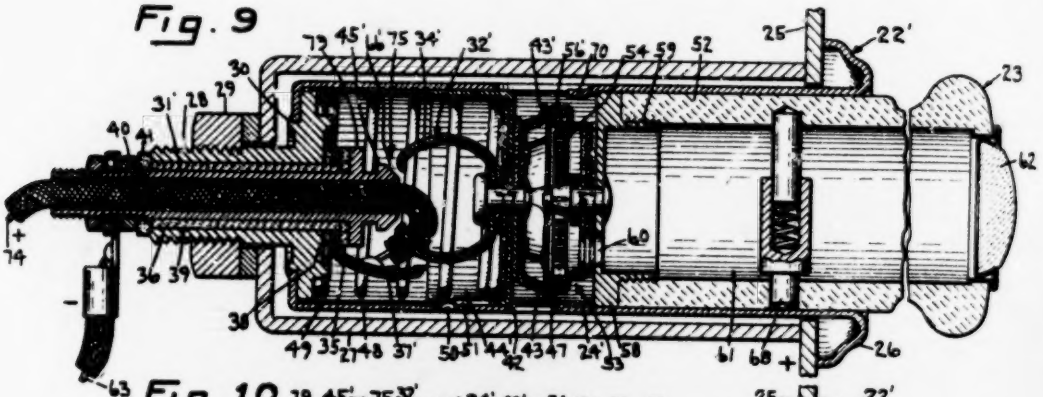


Fig. 10

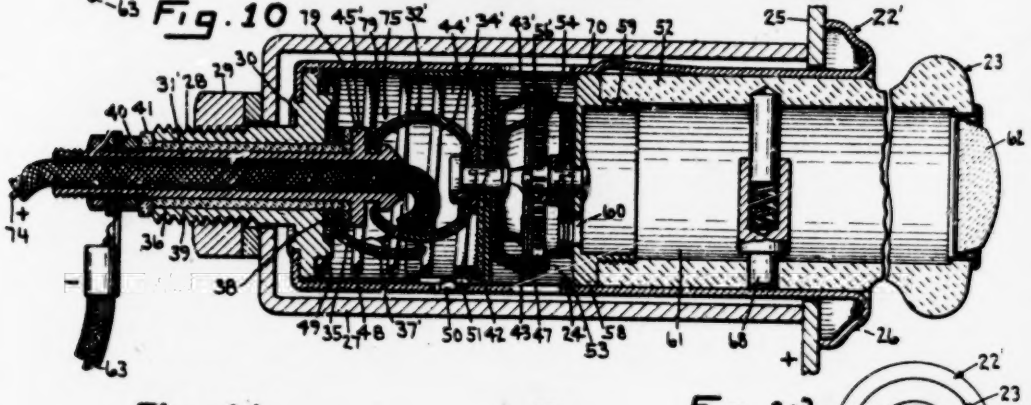


Fig. 11

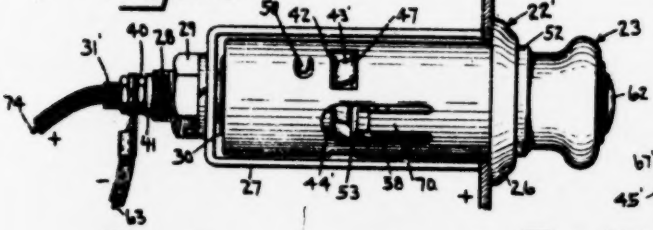


Fig. 12

Fig. 17

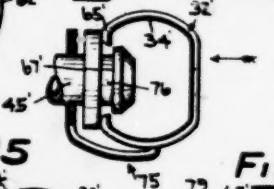


Fig. 13

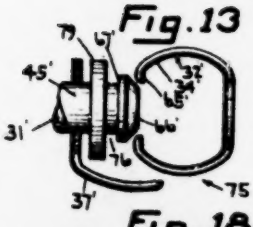


Fig. 14

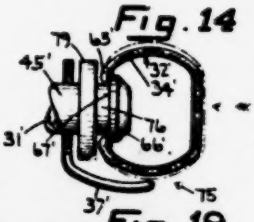


Fig. 15

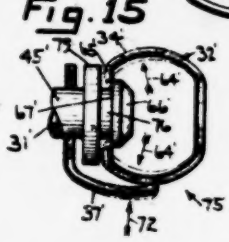


Fig. 16

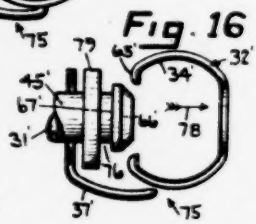


Fig. 18

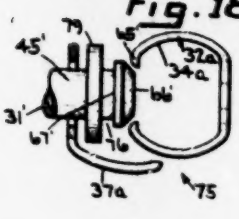
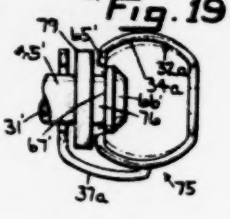


Fig. 19



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UNITED STATES PATENT OFFICE

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CIGAR LIGHTER

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Application July 23, 1932, Serial No. 624,193
Renewed August 5, 1937

17 Claims. (Cl. 219—33)

This invention relates to improved cigar and igarette lighters, particularly of the types for e in automobiles.

Most lighters of this type, which have been anufactured heretofore, are so designed that it necessary for the driver to push against a mov- le igniter unit or to press a switch button for extended period of time in order to close an ctrical circuit for the purpose of heating the nter to incandescence. However, these light- required the driver to continuously divert his servation from the road to the cigar lighter, in der to observe when the igniting unit thereon as heated to incandescence and in condition for e, the heated wire itself serving as an indi- ator. Besides diverting the driver's observance f the road it necessitated his driving with only ne hand while forcing the movable member of e cigar lighter or forcing a push button to cir- it closing position with his other hand over a mewhat extended period of time.

In order to overcome the latter disadvantage, me lighters have been constructed with a bayo- et lock or its equivalent, which holds the re- ovable unit of the cigar-lighter in circuit closing osition so that the igniting coil would be heated o incandescence without the necessity of push- g and holding the removable unit or push but- on switch in circuit closing position. However, hese cigar-lighters, with the bayonet lock, had he marked disadvantage of keeping the circuit losed for an extended time and sometimes even lead shorting the battery of the car for so long time that complete recharging was necessary in he event of the driver forgetting that he locked he removable igniting unit in closed circuit con- dition.

With both of these types of lighters, with and ithout bayonet lock, which are the types most enerally in use, there is a strong likelihood of eeping the circuit closed over too long a period f time; this, in addition to the hereinbefore men- tioned disadvantages of requiring the operator or driver to take one hand from the wheel and hold the cigar-lighter in closed circuit condition for an extended period of time, and to divert his gaze from the road to the cigar-lighter in order to ascertain when it may be lifted from the in- strument panel for use.

It is an object of the present invention to pro- vide an electric cigar-lighter in which it is not necessary for the driver to divert his gaze from he road ahead nor to keep his hand away from he wheel for any considerable extent of time, the elimination of which makes for greater safety while driving the car.

It is a further object of the present invention to provide a cigar-lighter which will be main- tained in closed circuit condition just long enough to heat the igniting coil to incandescence, and with no danger of an excessive drain on the battery.

In its broader aspects, the present invention provides a cigar-lighter wherein it is merely neces- sary for the driver to move the same in one direc- tion, whereupon the circuit to the igniting coil will be closed and the igniting unit will be auto- matically held in closed circuit position until the igniting coil is heated to incandescence whereup the circuit will be broken automatically so that there is no further drain upon the battery, thus, minimizing the skill, care, and effort on the part of the driver.

Also, and of particular importance, the lighter of the present invention, is arranged to give a suitable warning to the driver when heated to incandescence and the circuit is opened, so that there is no danger of the igniting unit cooling after it is heated, as might occur if the driver inadvertently waits too long before picking it up for use.

A feature of the present invention is the pro- vision of means for closing the circuit to the lighter in order to improve the thermal condi- tion of the lighter even though the regular thermally responsive circuit closing contacts are still in the thermally separated and circuit open- ing position.

Other features and advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is a longitudinal sectional view of the cigar-lighter of the present invention in nor- mal inoperative position.

Fig. 2 is a view similar to Fig. 1, but with the cigar-lighter in closed or operative position.

Fig. 3 is a plan view of the cigar-lighter.

Fig. 4 is a front view.

Fig. 5 is a detail view showing the thermostatic catch of the present invention in the inoperative position.

Fig. 6 is a detail, similar to Fig. 5, but shows the catch in the operative position.

Fig. 7 is a view similar to Figs. 5 and 6, but shows the catch in its partly released condition and in position to close a warning device circuit.

Fig. 8 is a detail view of a modified form of catch in the closed condition, similar to Fig. 6.

Fig. 9 is a longitudinal sectional view, similar

to Fig. 1, but with a modified form of catch and circuit closer, in the normal inoperative position.

Fig. 10 is a view similar to Fig. 9, but shows the parts in the operative position.

Fig. 11 is a plan view of the lighter shown in Figs. 9 and 10.

Fig. 12 is a front view.

Fig. 13 is a detail view of the circuit closer and thermostatic catch of this form of the invention in the open inoperative position, similar to Fig. 9.

Fig. 14 is a detail view, similar to Fig. 13, but shows the catch in closed circuit position.

Fig. 15 is a detail view, similar to Fig. 14, but shows the catch in its partially released position, and in position to close an auxiliary warning device circuit.

Fig. 16 shows the catch and circuit closing parts returned to the open inoperative position.

Fig. 17 is a view similar to Fig. 16 of the invention showing the catch used to effect an auxiliary closing of the circuit even though the catch is thermostatically maintained in an open position.

Fig. 18 is a view similar to Fig. 13, but shows the catch and circuit closer parts made of regular material, rather than bimetallic material.

Fig. 19 is a detail view, similar to Fig. 18, in the closed circuit position and about to be released.

Fig. 20 is a wiring diagram.

For convenience and clarity in the following description, the present invention is shown as applied to what may be termed "sleeve-type" cigar-lighters for use with automobiles, similar to the lighter disclosed in my copending application, Serial No. 357,030, but it should be understood that it may also be used with other types of cigar-lighters. Broadly, the cigar-lighter comprises a base member 22 and a removable igniting unit 23 which may be mechanically and electrically separated from the base member for use.

The base member 22 comprises a socket 24 adapted to be passed through a suitable aperture in an instrument panel 25 of an automobile, or other convenient location, until a flange 26 at the front end thereof engages with the front face of the panel. The socket is rigidly secured in place with a U-shaped yoke 27 fitted over an outer sleeve 28 and a clamping nut 29. The outer sleeve is preferably rigidly secured to the socket 24 by a spun-over flange 30.

A contact carrying sleeve 31 is insulatedly mounted in the outer sleeve 28, and at its forward end there is secured a main contact 32 having a main body portion 33 shaped similar to a washer and one or more integral hook-shaped fingers 34 extending therefrom. The contact carrier sleeve is secured in place by passing a washer 35 and tube 36 of insulation over the contact sleeve 31, passing an auxiliary contact 37 and insulating washer 38 over the insulating sleeve 36, and then passing the entire assembly through a bore 39 of the outer sleeve 28, where it is rigidly secured to the latter part with the nut 40 and insulating washer 41. These various parts of insulation just described prevent electrical connection between the contact sleeve 31 and outer sleeve 28 and are preferably made of mica in order to be heat-resisting.

The base member is completed with a slide 42 which carries an intermediate contact 43. This slide comprises a cup 44 which has a free fit within the socket 24. Near its center the cup is provided with a contact and catch stud 45 which is insulated from the cup by suitable insulating washers. It is held in place by spinning or otherwise heading-over the end of the shank 46, and when this is done a contact washer with yielding fingers 47 forming the intermediate contact 43 is secured to the cup so that current may be passed from the contact 45 to the fingers. The cup also serves to hold a spring 48 in the socket 24, free from the side walls at one end, while the other end of the spring is located in the socket by a shoulder portion 49 of the outer sleeve 28. Longitudinal movement of the slide 44 is limited in two directions by a lanced finger 50 part of the socket 24 being bent into and engaging the ends of a slot 51 in the cup.

The removable igniting unit 23 comprises a body 52 preferably made of bakelite or some similar insulating material of a size to slide freely in the socket 24. At one end it supports a heater unit 53 comprising a spirally wound heating coil 54 in a cup 55. One end of the heating coil is connected electrically to the outer wall of the shell by means of a ring 56 which is spun thereover and the other end of the coil is connected to a stud 57 in the slot. This stud passes through a suitable hole in the shell 55 and is insulated from the latter with suitable insulating washers. It is mechanically and electrically secured to a ring 58 which has a threaded connection 59 with the igniting unit body. The heater unit 53 is provided with a series of holes 60 which allow the incandescent glow of the heating coil to pass through a bore 61 of the body 52 to the front end of the igniting unit 23 where they are magnified and projected by means of a ruby glass 62, or by a disk of Catalin or similar light-conducting material.

The wiring circuit for the cigar-lighter comprises a ground connection through the instrument panel 25, flange 26 and the yoke 27 extending one side 63 of the car battery circuit to the socket 24 portion of the base 22 and the other pole of the circuit comprises a wire 63 from the battery connected to the contact sleeve 31 and rigidly secured thereto with a nut.

Now, of particular importance, the cigar-lighter is, according to the present invention, arranged to prevent an excessive drain on the battery, and to lessen the amount of attention required from the driver. To this end, there is provided a novel catch for holding the igniting unit in energizing position and a novel circuit closer switching arrangement for automatically controlling the circuit between the sliding contact stud 45 and the stationary main contact 32.

This special catch and thermostatically controlled switch is, according to the present invention, made as a unitary structure; that is, both are embodied together and it is thereby possible to effect a marked economy in the cost of manufacture, because fewer parts are required and a single assembly and adjustment takes care of both the catch and the thermostatically controlled switch. In its present preferred form this combined catch and thermostatically controlled switch comprises the main contact 32, made of bimetallic material in order to be responsive to thermal conditions of the latter. The fingers thereon are of narrow width and slightly bowed so that there is a marked tendency for these fingers to spread or to open up in the direction of the arrows 64 in Fig. 7 to the solid line position shown in the latter figure under the influence of heat.

These fingers are provided with hooks 65 at their outer ends which are adapted to engage with a bevel 66 on the front end of the main contact stud 45 and be forced apart thereby and then snapped in back of a shoulder 67 portion of the stud when the sliding sleeve is pushed to-

ward the bottom of the socket into position shown in Fig. 2.

The contact finger hooks 65 thus positively lock the sliding sleeve 44 in the closed position and at the same time complete an electrical connection from the main contact sleeve 31, contact 32, and the stud 45 to the intermediate contact disk 43 and also through the ring 58 and stud 57 of the removable igniting unit 23 to complete the circuit to the heating coil 54 to energize the coil and bring it to incandescence.

As the heating coil 54 is brought to incandescence some of the heat is radiated from the front face of the coil against the inside of the disk 43 and follows through the ring and contact fingers 47. As the fingers are heated in this manner some of the heat follows through to the stud 45 and fixed contact fingers 34, and at the same time heats the air within the chamber formed by the socket 24 and shell 44, to cause the contact fingers to expand gradually in the direction of the arrows 64 (see Fig. 7) until the hooks 65 move clear or free of the shoulder 67 whereupon the spring 48 is free to again move the sliding sleeve 44 forwardly in the socket 24 until the movement is stopped by the lanced ear 50 engaging an end of the slot 51 as shown in Fig. 1. At the same time it pushes the removable igniting unit 23 forwardly in the socket and moves the contact 45 of the switch into open circuit or de-energizing position shown in Figs. 1, 5 and 7.

It should also be noted that the particular form of switching unit and contacts provided therefor by the present invention have the very desirable advantage of making it unnecessary for the operator to twist, push, or in any special manner rotatably align the removable igniting unit 23 relative to the base 22 when returning the unit to the inoperative position on the base, or to do any involved twisting or aligning when it is desired to move the removable igniting unit into the operative or energizing position. It is merely necessary to put the plug 23 into the socket 24 when placing one with the other and merely necessary to push against the end of the igniting unit in order to move it to energizing position.

Normally the igniting unit 23 is in the position shown in Fig. 1 for the driver or other occupant of the car, after using the unit, merely slides it into the socket 24 until the cup 55 and ring 56 thereon engages with the spring contact fingers 47 of the slide 44. The pressure of the spring 48 on the sliding member serves as a stop or indication that the unit has been slid fully into the inoperative position. A spring plunger 68 is located in the plug body 52 to impinge against the bore of the socket 24 and prevent the igniting unit 23 from working out of the socket even though the car vibrates badly.

When it is desired to use the cigar-lighter the driver merely grasps the knob portion of the igniter unit body 52 and pushes it deeper into the socket against the pressure of the yielding spring 48 whereby the bevelled end 66 of the contact plug 45, as the unit slides in the socket 24, engages with the hooks 65 to spread the fingers 34 until the hooks snap over the shoulder 67 as shown in Fig. 6, to lock the sliding unit in the back and switch closing position. Preferably a long finger 70 is lanced inwardly of the socket 24 with a raised portion adapted to engage and complete electrical connection between the socket 24 and igniting unit if the bore of the socket becomes worn considerably. The operator may then release his grip on the igniting unit and again use both hands for driving while the coil 54 is being heated to incandescence.

As the coil comes up to heat, some of the heat travels through the stud 45 and gradually moves the fingers of the bimetallic contact member to open position while the hooks thereon ride over the shoulder portion 67 of the stud 45 until a release between the shoulder and hooks is effected and the igniting unit moved back into the inoperative position shown in Fig. 1 under the influence of the sliding sleeve 44 and spring 48. Thereafter, the driver pulls the lighter from the socket for use.

The light disk 62 at the outer end of the igniting unit 23 serves to transmit an incandescent glow from the heater coil and warn the operator that the lighter is in condition for use. However, this would necessitate the driver glancing at the lighter from time to time in order to know when it was properly heated.

According to the present invention, a positive warning is provided to help the driver and make it unnecessary for him to continuously or sporadically observe the lighter. This novel warning device comprises a switch 71 adapted to be closed automatically when the igniting unit has been brought to the desired degree of incandescence. This switch comprises the contact member 37 of bimetallic material so arranged that when the igniting unit is in the operative position shown in Fig. 2 and is being brought to incandescence, the heat thereof is transmitted to the contact member 37 which curves in the direction of the arrow 72 in Fig. 7, while the main contact arms or fingers 32 move in the direction of the arrows 64. This warning device contact member is located and adjusted so that it contacts with the finger 34 just before and during release of the contact stud 45 from the hooks 65 as shown in Fig. 7. The circuit is completed to a bell 73, or other preferably audible warning device, through a wire 74 connected to the contact 37, of one polarity, while current of the other polarity passes through the wire 74a to the warning device as shown in the wiring diagram, Fig. 20.

Thus, it is merely necessary for the operator or driver to give the igniter unit 23 a quick push into the operative position in Fig. 2, and thereafter continue driving, or otherwise using both heads, and without diverting his eyes from the road ahead, for the structure provided by the present invention automatically returns the igniting unit to inoperative and electrically disconnected positions, and at the same time warns the operator audibly that the lighter has been put into condition for use to light a cigarette, or the like. If preferred the warning device switch 71 provided by the present invention may be used to close the circuit to a lamp, such as the lamp 73a, shown by dot and dash lines in Fig. 20, located in a place remote from the cigar-lighter and close to the regular line of driving vision.

In Figs. 9 to 16 inclusive, there is shown a modified form of the present invention. The removable igniting unit 23 in this form of lighter is exactly the same as that shown in the first form of the invention. The base member 22', however, while like the base member 22 of the preferred form of the invention in many respects is provided with a different form of catch and switch unit 75 comprising a contact stud 45' made integral with a contact sleeve 31' and a sliding sleeve 44' is arranged to support and carry a yielding

bimetallic contact member 32' with bowed fingers 34' and hooks 66'.

The fingers 34' and hooks 66' are normally in the closed position shown in Fig. 9, and are adapted to ride over a bevel 68' on the end of the contact sleeve 31' and hook into a groove 76 in back of the shoulder 67', as shown in Figs. 10 and 14. With this form of the present invention, as with the preferred form, it is merely necessary for the operator to push the igniting unit 23 longitudinally into the bore of a socket 24' portion of the base 22' until the hooks snap into the groove 76 whereupon current is conducted to the outer end of the heater coil 54 through the stud 77, contact fingers 43', and ring 56', the circuit being completed by the closed line between the panel 25, shell 26', ring 58, and stud 57 to the inner end of the coil.

When the switch 75 is closed and as the heater coil is brought to incandescence the spring contact fingers 34' and hooks 66' gradually open from the position shown in Fig. 14 in the direction of the arrow 64' and into the position shown in Fig. 15 until the hooks are free of the shoulder 67' portion of the groove 76, whereupon the sliding unit and hook carried thereby, under the influence of the spring 48, travel in the direction of the arrow 78 shown in Fig. 16 to move the igniting unit again into the inoperative position shown in Fig. 9.

As with the preferred form of the invention, this form may be provided with a warning device, including the contact member 37' insulatedly mounted on the modified form of contact sleeve 31'. Here again the signal contact 37' is made of bimetallic material and curves inwardly in the direction of the arrow 72' (see Fig. 15) as the main contact member 32' carried by the sliding sleeve 44' moves outwardly under the influence of heat in the direction of the arrows 64' until engagement occurs with the signal contact, just before and during release of the switch, when the lighter has been brought to incandescence. The wiring for this signal contact is the same as for the preferred form of the invention already described.

This modified form of the present invention has the advantage of making it possible for the operator to manually manipulate the lighter to obtain a further degree of incandescence without waiting for the main contacts 32' to cool and resume their normal closed position, and to this end there is provided a flange 70 which contacts with the ends of the hook 66' when the igniter is pushed the full extent toward the back of the base member as shown in Fig. 17.

It should be particularly noted that, according to the present invention, the warning device need not be operated as the igniting unit is moving into the operative position, but will only be operated after the igniting unit is heated and ready for use. This is accomplished by arranging the signal device contact so that it moves toward the regular contacts 32 as the lighter is brought to the proper degree of incandescence. When the signal contact 37 or 37' is cold, as when the igniting unit 23 is moved to the operative position, the bevel at the end of the contact stud cannot spread the main contacts sufficiently for them to engage the signal contact and close the signal circuit. However, when the various contacts are heated and the main contacts spread sufficiently to clear the contact stud, for release, the heated signal contact 37, which has contracted, is in a position to close the signal circuit.

In Figs. 18 and 19 there is shown a further modified form of the present invention comprising a yielding contact member 32a, having fingers 34a similar to and arranged to ride over the bevel 68' and snap into grooves 76 in much the same manner as the contact member 32', shown in Figs. 13 and 14, or the contact members 32 shown in Figs. 5 and 6. The parts are proportioned to expand the arms as the heater coil is brought to the desired degree of incandescence. This form of yielding contact member may be used in order to effect greater manufacturing economy and it may be more advantageous than the bimetallic form in lighters which are brought to incandescence only slowly, or if the cigar lighter construction is such that there is a quick flow of heat from the heater coil to the yielding contact member; in other words, where it is desired to have a slowly responsive device. Also, it may be preferred to use a solid contact member 37a as a signal contact rather than the bimetallic form. However with this form, the contact 37a is shielded or mounted to prevent it from receiving a flow of heat from the heater coil and thereby cause it to remain stationary while the yielding contact members gradually expand from the heat of the coil 54.

If preferred, the catch and switch of the present invention may be, as shown in Fig. 8, arranged to close the circuit to the warning device only as the removable igniting unit is fully heated and is actually travelling to the inoperative position, and not at all prior to such movement. For this purpose, the yielding contacts 32b are provided with slightly longer hooks 66b and a contact stud 45b having two bevels 80 and 81. This arrangement is such that the hooks 66b on the contact fingers slide first over the bevel 80 and then down over the second bevel 81 to hook in back of a shoulder 67b when the operator pushes the igniting unit into place. When the heater coil is brought to incandescence the yielding contact member expands until the ends of the hooks 66b reach the bevel 81. Thereafter, the straight wall or shoulder 67b no longer holds the sliding sleeve back, and as the contact stud 45b is moved relative to the yielding contact member 32b the bevel 81 expands the heated yielding contact member a slightly greater extent to close the gap with the signal contact 37b. Thus, the bevel 81 and pressure of the spring 48 may be used to close the warning device circuit and makes unnecessary any close adjustment between the regular circuit control contacts and the warning device contact.

Cross reference is made to my copending application S. N. 118,838, filed January 2, 1937, which is a division of the present application and wherein are claimed certain features of the invention herein disclosed.

Other variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

Having thus described the invention, what is claimed as new and for which it is desired to obtain Letters Patent, is:—

1. In an electric cigar-lighter, the combination of a base member; a plug removably supported on the base member and movable thereon into longitudinally different operative and inoperative positions; an electrical heating coil on said plug; a warning device; and means, including thermostatically controlled means responsive to the tem-

perature of the heating coil, adapted to move said plug from its operative position longitudinally relative to the base to its inoperative position when said coil is heated a predetermined extent and to render said warning device operative.

2. In an electric cigar-lighter, the combination of a base member; a unit removably supported in operative and inoperative positions by said base member; a heating coil on said unit; means for moving the removable unit in the base member from its operative to its inoperative position; a bimetallic catch associated with said means; a warning device; a bimetallic element associated with said warning device, said bimetallic catch and bimetallic element moving into engagement one with the other in response to the increase in temperature of the heating coil and in this movement releasing the first-named means and moving the removable unit to its inoperative position and actuating the warning device.

3. In an electric cigar-lighter, the combination of a base member; a unit removably supported by said base member in operative and inoperative positions; a heating coil on said unit; means for automatically moving the removable unit in the base member a thermostatic catch responsive to the increase in temperature of the heating coil to release the first-named means; a warning device; and a warning device contact, said thermostatic catch being adapted to automatically move into engagement with said contact and actuate the warning device.

4. In an electric cigar-lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means for automatically moving the removable unit in the base member; a thermostatic catch responsive to the increase in temperature of the heating coil to release the first-named means; a warning device; a warning device contact; and means for effecting positive relative movement between the catch and the contact to actuate the warning device when the catch is released by the action of the heating coil.

5. In an electric cigar-lighter, the combination of a base member; a unit removably supported by said base member in operative and inoperative positions; a heating coil on said unit; yielding means for automatically moving said unit on the base member; a thermostatic unit influenced by the heating coil for controlling said yielding means; and warning means including a second thermostatic element influenced by the heating coil and adapted to give an audible warning when the heating oil is heated a predetermined extent and when the yielding means is released by said thermostatic unit.

6. In an electric cigar-lighter, the combination of a base member; a unit removably supported by said base member and having an operative and an inoperative position thereon; a heating coil on said unit means for automatically moving the removable unit; a thermostatically controlled unit for controlling said means; a warning device; and a thermostatic element for the warning device, said thermostatic catch expanding and said thermostatic element contracting in response to the increase in temperature of the heating coil, and adapted to simultaneously release the yielding means and give an audible warning when said coil has been heated a predetermined extent.

7. An electric cigar lighter comprising a holder; an igniting unit removably supported on the holder and having a heating element adapted to be electrically connected to the holder to be brought to incandescence for use, said igniting unit being completely removable from the holder for use and having a body carrying said heating element and concealing the same from view; means on the igniting unit in light conducting relation with the heating element to indicate the degree of incandescence of the heating element when being heated for use; signal means responsive to the temperature of the heating element for indicating that the heating element has attained a predetermined temperature; and means, including means responsive to the temperature of the heating element, to electrically disconnect the latter from the holder when the heating element attains a predetermined temperature.

8. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means slidable in the base for closing a circuit to energize the heating unit; means normally urging said means to open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means upon the heating element attaining its desired heat; a warning device; and means operated by the thermostatic catch upon movement into release position for actuating the warning device.

9. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means slidable in the base for closing a circuit to energize the heating unit; means normally urging said means into open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means upon the heating element attaining its desired heat; and means for producing an audible signal, said means being operated upon movement of the thermostatic catch into release position.

10. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means in the base member for closing a circuit to energize the heating unit; means normally urging said means into open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means upon the heating element attaining its desired heat; and means operated in response to the movement of the thermostatic catch to release position for producing an audible signal.

11. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on the unit; means slidable in the base for closing the circuit to energize the heating unit; means normally urging said means into open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means upon the heating element attaining its desired heat; and means actuated upon release of the thermostatic catch for producing an audible signal.

12. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means slidable in the base member for closing the circuit to energize the heating unit; means normally urging said means to open-circuit position; heat-responsive means for holding the circuit closed and adapted to release the first-named means when the heating element has attained its desired heat; and means operated by the movement of the heat-responsive means

into release position for producing an audible signal.

13. In an electric cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means including a contact slidable in the base for closing a circuit to energize the heating unit; means normally urging said contact to open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the contact when the heating element has attained its desired heat; and means operable upon release of said contact by the catch for producing an audible signal.

14. In a cigar lighter, the combination of a base member; a unit removably supported by said base member; a heating coil on said unit; means slidable in the base for closing the circuit to energize the heating unit; means normally urging said means to open-circuit position; a thermostatic catch for holding the circuit closed and adapted to release the first-named means for movement into open circuit position upon the heating element attaining its desired heat; and means operated when the first-named means moves into open-circuit position for producing an audible signal.

15. In an electric cigar lighter comprising a holder; an igniting unit removably supported on the holder and having a heating element adapted to be electrically connected to the holder to be brought to incandescence for use, said igniting unit being completely removable from the holder for use and having a body carrying said heating element and concealing the same from view; means on the igniting unit in light-conducting relation with the heating element to indicate the degree of incandescence of the heating element when being heated for use; means including means responsive to the temperature of the heating element, to electrically disconnect the latter from the holder when the heating element attains a predetermined temperature; and signal means responsive to the temperature of the heating element for indicating that the heating element has attained a predetermined temperature and that the heating element is electrically disconnected from the holder.

16. In an electric cigar lighter comprising a holder; an igniting unit removably supported on the holder and having a heating element adapted to be electrically connected to the holder to be brought to incandescence for use, said igniting unit being completely removable from the holder for use and having a body carrying said heating element and concealing the same from view; means on the igniting unit in light-conducting relation with the heating element to indicate the degree of incandescence of the heating element when being heated for use; means, including means responsive to the temperature of the heating element, to electrically disconnect the latter from the holder when the heating element attains a predetermined temperature; and signal means responsive to the temperature of the heating element for indicating that the heating element has attained a predetermined temperature or that the heating element is electrically disconnected from the holder due to the operation of the heat-responsive means.

17. In an electric cigar lighter comprising a holder; an igniting unit movably mounted on the holder and completely removable therefrom for use; a heating element carried by the igniting unit and adapted to be brought to incandescence for use, the body of the igniting unit concealing the heating element from view; means for closing a circuit through the heating element when moved to circuit-closing position; means for indicating the degree of incandescence of the heating element; heat-responsive means for opening the circuit when the heating element attains its predetermined temperature; and signal means actuated when the circuit-opening means operates to indicate that the circuit is open, said means operating during the time that the circuit is in open position due to the action of the heat-responsive means to indicate that the circuit cannot be closed by the normal movement of the igniting unit into circuit-closing position.

JOSEPH H. COHEN.

CERTIFICATE OF CORRECTION.

Patent No. 2,117,703. May 17, 1938.

JOSEPH H. COHEN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 15, for "incandesence" read incandescence and for "whereup" read whereupon; line 23, for "incandesence" read incandescence; page 3, second column, line 50, for "heads" read hands; page 5, first column, line 55, claim 5, for "oil" read coil; and line 62, claim 6, after "unit" insert a semicolon; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 2nd day of August, A. D. 1938.

(Seal)

Leslie Frazer,
Acting Commissioner of Patents.

PATENT SPECIFICATION

Application Date: Dec. 14, 1926. No. 31,643/26.
" " May 31, 1927. No. 14,563/27.
One Complete Left: June 2, 1927.
Complete Accepted: Feb. 16, 1928.

285,200

481

PROVISIONAL SPECIFICATION.

No. 31,643, A.D. 1926.

Automatic Cut-out for Electric Cigar and Cigarette Lighter.

We, S. SMITH AND SONS (MOTOR ACCESSORIES) LIMITED, a company registered under the laws of Great Britain, of Central Works, Edgware Road, Cricklewood, London, N.W. 2, FREDERICK WILLIAM MILLER, a British subject, of "Hazeldell", Aylesbury Road, Hockley Heath, Warwickshire, and FREDERICK MILLER, a British subject, of "Hazeldell", Aylesbury Road, Hockley Heath, Warwickshire, do hereby declare the nature of this invention to be as follows:—

This invention is for automatically switching off the electric current running through the resistance of a cigar or cigarette lighter and preventing the resistance from fusing, which is usually caused through holding down the switch too long. Our method of preventing burning out the resistance is as follows. On base plate of lighter is the positive terminal stud and in contact with this stud is the end of a strip of thermostatic metal which allows current to pass through this metal to another stud which carries the current through the resistance filament to the negative terminal. As the resistance filament reaches the maximum heat, the actual heat from the resistance causes the thermostatic metal to expand or contract and so breaks the circuit and can be regulated either to keep the lighter at an even heat or to automatically glow and cool.

Dated this 13th day of December, 1926.

S. SMITH & SONS (MOTOR ACCESSORIES) LIMITED,
ALEXANDER SMITH,
SAML. SMITH,
Directors.
H. WARWICK,
Secretary.

F. W. MILLER,
F. MILLER.

PROVISIONAL SPECIFICATION.

No. 14,563, A.D. 1927.

Improvements relating to Electric Cigar, Cigarette and like Lighters.

We, S. SMITH AND SONS (MOTOR ACCESSORIES) LIMITED, a company registered under the laws of Great Britain, of Central Works, Edgware Road, Cricklewood, London, N.W. 2, FREDERICK WILLIAM MILLER, British subject, and FREDERICK MILLER, British subject, both of 68, Nansen Road, Sparkhill, Birmingham, do hereby declare the nature of this invention to be as follows:—

This invention relates to electric cigar, cigarette, pipe and like lighters of the resistance type, such as are used in motor-cars and other vehicles or in other places for the convenience of smokers.

[*Price* 1/-]

With lighters of the above type, if the switch is held closed for too long, the high resistance wire or filament becomes unduly heated and fuses, thus putting the lighter out of action.

The object of the present invention is to obviate this disadvantage appertaining to resistance lighters, and to provide, in conjunction with the lighter, an automatic cut-out or protective device which will prevent the fusing of the resistance wire and which may be arranged to maintain the lighter at a substantially uniform glowing temperature no matter how long the switch may remain closed.

According to the invention, a thermo-

statically-controlled switch or make-and-break device is included in the lighter circuit, the controlling thermostat being arranged to be influenced by the heating effect of the current flowing or by the temperature of the heater so as to break the circuit before the fusing temperature of the resistance wire is reached. Conveniently the current flows through the thermostat, which carries or operates a switch contact in the circuit, so that it is heated by the current and breaks the circuit. As the thermostat cools it again closes the circuit and so long as the lighter switch remains closed, the thermostat repeatedly opens and closes the circuit, thereby avoiding overheating of the resistance wire, which, in this manner, may be arranged to be maintained at a substantially uniform, or at a variable, glow, as desired. Preferably, a second thermostat element is employed to compensate for the effect of variations in the temperature of the atmosphere in which the main or controlling thermostat is situated due to external influences, such as the heat of the engine or climatic conditions. Without this compensating thermostat variations in the temperature of the surrounding atmosphere, due to causes other than the temperature of the heater, would possibly influence the main thermostat element and cause the circuit to be opened when the lighter was not in use, or cause the contact to be opened too far when the current flowed through the said element. The said compensating thermostat is arranged to carry the contact with which the contact controlled by the main thermostat co-operates, and is influenced by external temperature conditions to the same extent as the main thermostat, so that any variation in such temperature conditions will affect both contacts equally.

In carrying out the invention in a form suitable for use with an existing lighter, the cut-out device comprises two parallel bi-metallic thermostatic strips preferably composed of nickel and brass, one strip constituting a main controlling thermostat and the other functioning as a compensating thermostat, as hereinafter described. These strips are fixed at one end to suitable metallic studs or posts secured upon a base plate of insulating material and the stud or post carrying the main thermostatic strip is connected by a suitable conductor to a terminal on the said base plate said terminal being adapted to be connected in the electric circuit of the lighter. The said strip carries at its free end a contact point of any suitable material, such as nickel, and this contact point normally engages a similar contact point carried upon the free end of the other or compensating strip. The said free end of this latter strip is riveted or otherwise directly connected to one end of a light flexible bow spring, the other end of which is fixed to a conducting strip or bar connected to a second terminal on the base plate, the said terminal being connected to the lighter circuit. The bow spring acts as a flexible conductor for the current and also assists normally to maintain the contact points together.

When the lighter switch is closed the current flows from the one terminal through the main thermostatic strip, traverses the closed contact points, and passes through the bow spring and conducting bar to the other terminal. The said main thermostatic strip is made of such a resistance that when the resistance filament of the lighter attains a bright red glow, and before the fusing point of the said filament is reached, the heating effect of the current passing through the strip causes the latter to deflect away from the compensating strip and the contact points to separate, thus breaking the circuit. The main strip thus commences to cool and returns to its former position, the contact points coming together and (if the main lighter switch remains closed) again completing the circuit, the operation being repeated so long as the said main lighter switch remains closed. It can be arranged for the interval between the breaking and re-closing of the circuit to be very short so that the lighter will be maintained at a substantially uniform glow, or the interval can be longer so that the lighter will alternately glow and cool.

The cut-out may be enclosed by a detachable cover suitably secured to the base plate.

The compensating thermostatic strip has a similar deflection characteristic to the main strip, so that if the temperature of the surrounding atmosphere varies, due to the heat of the engine or by reason of climatic conditions, both the said compensating strip and the main thermostatic strip, will move together and to the same extent, so that the contact points will remain closed until a current passes through the main strip. Thus the opening of the circuit is dependent solely upon the heating effect of the current. In a modification, however, it may be arranged for the circuit-controlling thermostatic element to be placed close to the resistance filament so as to be influenced by the heat radiated therefrom in order to open the circuit before the fusing point of the filament is reached. In this case, however, the compensating thermostat, while moving in the same direction, would have a

different deflection characteristic from the main thermostat, so that the contacts would remain together during small variations in temperature due to engine heat or atmospheric conditions, but would separate under the influence of the greater increase of temperature due to radiation from the lighter.

Instead of the cut-out being in the form of a separate fitting for use with existing lighters, as above described, it may be combined with the lighter as a self-contained unit. Thus, the thermostats would be located in a recess in the back of the base plate of the lighter, the main thermostat being connected to a bridge or plate carrying one contact of the main controlling switch of the lighter, and the contact point on the compensating thermostat being connected through the bow spring to one of the terminals on the base plate.

It is within the scope of the invention to dispense with the compensating thermostat, if desired, and to employ a single thermostat controlling the make-and-break contacts, said thermostat being influenced by the heating effect of the current passing through it, or by radiation from the resistance filament, or by both the current and the radiated heat.

Dated this 30th day of May, 1927.
H. N. & W. S. SKERRETT,
24, Temple Row, Birmingham,
Agents for Applicants.

COMPLETE SPECIFICATION.

Improvements relating to Electric Cigar, Cigarette and like Lighters.

We, S. Smith and Sons (Motor Accessories) Limited, a company registered under the laws of Great Britain, of Central Works, Edgware Road, Cricklewood, London, N.W. 2, Frederick William Miller, British subject, and Frederick Miller, British subject, both of 68, Nansen Road, Sparkhill, Birmingham, and also both of "Hazeldell", Aylesbury Road, Hockley Heath, Warwickshire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to electric cigar, cigarette, pipe and like lighters of the resistance type, such as are used in motor-cars and other vehicles or in other places for the convenience of smokers.

With lighters of the above type, if the switch is held closed for too long, the high resistance wire or filament becomes unduly heated and fuses, thus putting the lighter out of action.

The object of the present invention is to obviate this disadvantage appertaining to resistance lighters, and to provide, in conjunction with the lighter, an automatic cut-out or protective device which will prevent the fusing of the resistance wire and which may be arranged to maintain the lighter at a substantially uniform glowing temperature no matter how long the switch may remain closed.

According to the invention, a thermostatically-controlled switch or make-and-break device is included in the lighter circuit, the controlling thermostat being arranged to be influenced by the heating effect of the current flowing or by the temperature of the heater so as to break the circuit before the fusing temperature of the resistance wire is reached. Conveniently the current flows through the thermostat, which carries or operates a switch contact in the circuit, so that it is heated by the current and breaks the circuit. As the thermostat cools it again closes the circuit and so long as the lighter switch remains closed, the thermostat repeatedly opens and closes the circuit, thereby avoiding overheating of the resistance wire, which, in this manner, may be arranged to be maintained at a substantially uniform, or at a variable, glow, as desired. Preferably, a second thermostat element is employed to compensate for the effect of variations in the temperature of the atmosphere in which the main or controlling thermostat is situated due to external influences, such as the heat of the engine or climatic conditions. Without this compensating thermostat variations in the temperature of the surrounding atmosphere, due to causes other than the temperature of the heater, would possibly influence the main thermostat element and cause the circuit to be opened when the lighter was not in use, or cause the contact to be opened too far when the current flowed through the said element. The said compensating thermostat is arranged to carry the contact with which the contact controlled by the main thermostat co-operates, and is influenced by external temperature conditions to the same extent as the main

thermostat, so that any variation in such temperature conditions will affect both contacts equally.

Figure 1 of the accompanying drawings is an elevation of a cut-out device according to the present invention, the casing or cover being shown in section.

Figure 2 is a vertical section through the cut-out on line 2—2, Figure 1.

Figure 3 is a horizontal section on line 3—3, Figure 1.

Figure 4 is a vertical section, partly in elevation, showing the cut-out combined with an electric lighter as a self-contained unit.

Figure 5 is a rear elevation of the said lighter showing the cut-out fitted thereto.

Figure 6 is a horizontal section through the base of the lighter.

Referring to Figures 1 to 3 of the drawings, showing the invention in a form suitable for use with an existing lighter, the cut-out device comprises two parallel bi-metallic thermostatic strips 1, 2, preferably composed of nickel and brass, the strip 1 constituting a main controlling thermostat and the other 2 functioning as a compensating thermostat, as hereinafter described. These strips 1, 2, are fixed at one end to suitable metallic studs or posts 3, 4, secured upon a base plate 5 of insulating material and the stud or post 3 carrying the main thermostatic strip 1 is connected by a suitable conductor 6 to a terminal 7 on the said base plate said terminal being adapted to be connected in the electric circuit of the lighter. The said strip 1 carries at its free end a contact point 8 of any suitable material, such as nickel, and this contact point normally engages a similar contact point 9 carried upon the free end of the other or compensating strip 2. The said free end of this latter strip is riveted or otherwise directly connected to one end of a light flexible bow spring 10, the other end of which is fixed to a conducting strip or bar 11 connected to a second terminal 12 on the base plate, the said terminal 12 being connected in the lighter circuit. The bow spring 10 acts as a flexible conductor for the current and also assists normally to maintain the contact points 8, 9, together.

When the lighter switch is closed the current flows from the terminal 7 through the main thermostatic strip 1, traverses the closed contact points 8, 9, and passes through the bow spring 10 and conducting bar 11 to the other terminal 12. The said main thermostatic strip 1 is made of such a resistance that when the resistance filament of the lighter attains a bright red glow, and before the fusing point of the said filament is reached, the heating effect of the current passing through the strip causes the latter to deflect away from the compensating strip 2 and the contact points 8, 9, to separate, thus breaking the circuit. The main strip 1 thus commences to cool and returns to its former position, the contact points coming together and (if the main lighter switch remains closed) again completing the circuit, the operation being repeated [illegible]ng as the said main lighter switch [illegible]ns closed. It can be arranged for [illegible]erval between the breaking and re-[illegible]g of the circuit to be very short so [illegible] the lighter will be maintained at a substantially uniform glow, or the interval can be longer so that the lighter will alternately glow and cool.

The cut-out may be enclosed by a detachable cover 13 suitably secured to the base plate.

The compensating thermostatic strip 2 has a similar deflection characteristic to the main strip 1, so that if the temperature of the surrounding atmosphere varies, due to the heat of the engine or by reason of climatic conditions, both the said compensating strip 2 and the main thermostatic strip 1, will move together and to the same extent, so that the contact points 8, 9, will remain closed until a current passes through the main strip. Thus the opening of the circuit is dependent solely upon the heating effect of the current. In a modification, however, it may be arranged for the circuit-controlling thermostatic element to be placed close to the resistance filament so as to be influenced by the heat radiated therefrom in order to open the circuit before the fusing point of the filament is reached. In this case, however, the compensating thermostat, while moving in the same direction, would have a different deflection characteristic from the main thermostat, so that the contacts would remain together during small variations in temperature due to engine heat or atmospheric conditions, but would separate under the influence of the greater increase of temperature due to radiation from the lighter.

Instead of the cut-out being in the form of a separate fitting for use with existing lighters, as above described, it may as shown in Figures 4 to 6, be combined with the lighter as a self-contained unit. In this arrangement thermostats 1, 2, are located in a recess 14 in the back of the base plate 15 of the lighter, the main thermostat 1 carrying the contact 8 being connected by a bar 16 to a bridge or plate 17 carrying one contact 18 of the main controlling switch 19 of the lighter, and

the contact point 9 on the compensating thermostat 2 being connected through the bow spring 10 and bar 20 to a terminal 21 on the base plate. In the construction of the lighter shown in the drawings, but which, apart from the cut-out, forms no part of the present invention, the other terminal 22 (Figure 5) for connecting to the battery is in electrical connection with a metal rim or flange 23 engaging a metal ring 24 on a detachable front portion 25 carrying the resistance filament 26 which is connected to a stud 27 engaging a contact 28 on the spring switch arm 19, which carries a contact 29 adapted, when the arm is pressed rearwards, to engage the contact stud 18 on the bridge 17, so completing the circuit.

It is within the scope of the invention to dispense with the compensating thermostat, if desired, and to employ a single thermostat controlling the make-and-break contacts, said thermostat being influenced by the heating effect of the current passing through it, or by radiation from the resistance filament, or by both the current and the radiator heat.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A cut-out device for use in connection with an electric cigar, cigarette or like lighter comprising a thermostatically-controlled switch or make-and-break device adapted to be included in the lighter circuit.

2. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in Claim 1, wherein the controlling thermostat is adapted to be traversed by the electric current flowing through the resistance of the lighter, so as to be influenced by the heating effect of the said current.

3. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in Claim 1 or 2, wherein the controlling thermostat is adapted to be influenced by the heat from the resistance of the lighter.

4. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in any one of the preceding claims, wherein the controlling thermostat comprises a bi-metallic strip fixed at one end and carrying or operating a switch contact in the lighter circuit, substantially as described.

5. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in any one of the preceding claims, having, in combination with a main controlling thermostat arranged to break the circuit, a compensating thermostat element carrying the contact with which the contact controlled by the main thermostat co-operates and adapted, under the influence of variations in the temperature of the atmosphere due to external conditions, to move its said contact in the same direction as the contact controlled by the main thermostat moves, substantially as and for the purposes herein described.

6. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in Claim 5, wherein the compensating thermostat element consists of a bi-metallic strip fixed at one end and arranged substantially parallel to a bi-metallic strip constituting the main controlling thermostat, the two strips carrying co-operating contacts at their free ends, substantially as described.

7. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in Claim 6 or 7, wherein the contact on the compensating thermostat is connected in the circuit of the lighter through the medium of a flexible spring conductor attached to the said thermostat, substantially as described.

8. A cut-out device for use with an electric cigar, cigarette or like lighter as claimed in any one of the preceding claims, and mounted upon the base of the lighter itself so as to form a self-contained unit, substantially as described.

9. A cut-out device for use with an electric cigar, cigarette or like lighter, substantially as herein described and set forth in Figures 1 to 3 of the drawings.

10. A cut-out device combined with an electric cigar, cigarette or like lighter, substantially as herein described and set forth in Figures 4 to 6 of the drawings.

Dated this 1st day of June, 1927.

H. N. & W. S. SKERRETT,
24, Temple Row, Birmingham,
Agents for the Applicants.

491

Fig. 1.

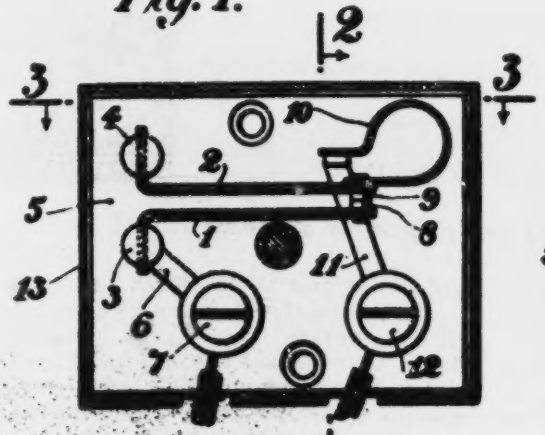


Fig. 2.

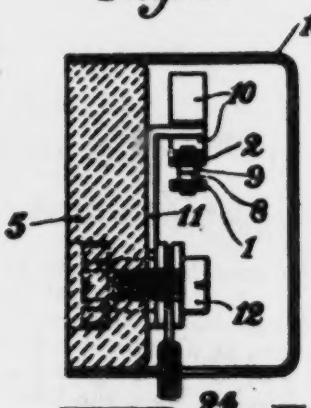


Fig. 3.

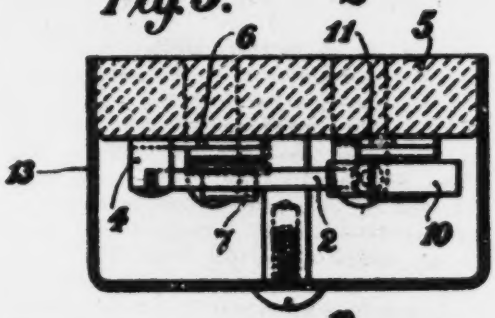


Fig. 4.

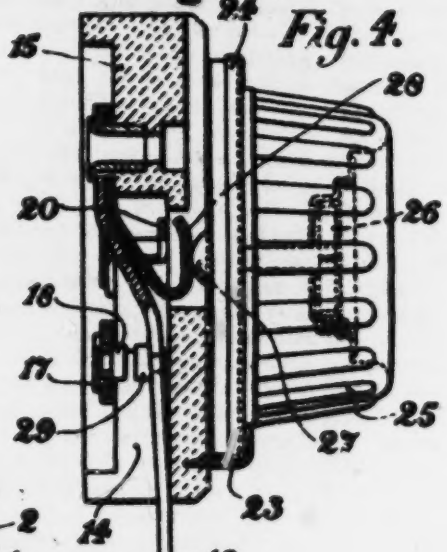


Fig. 5.

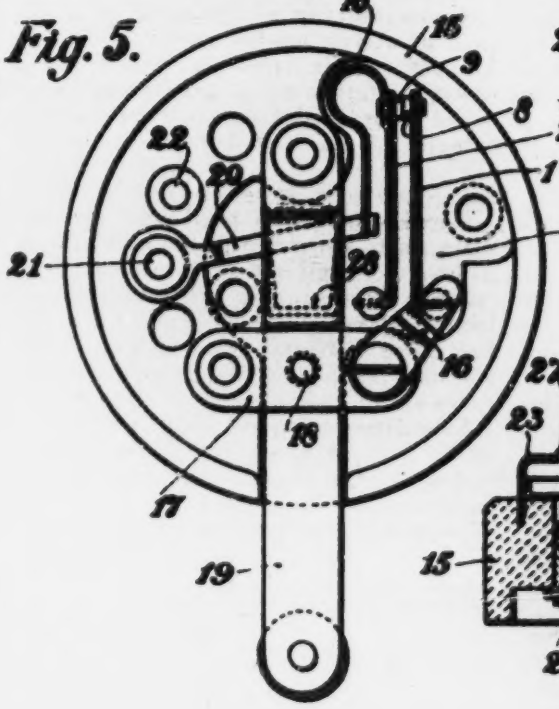
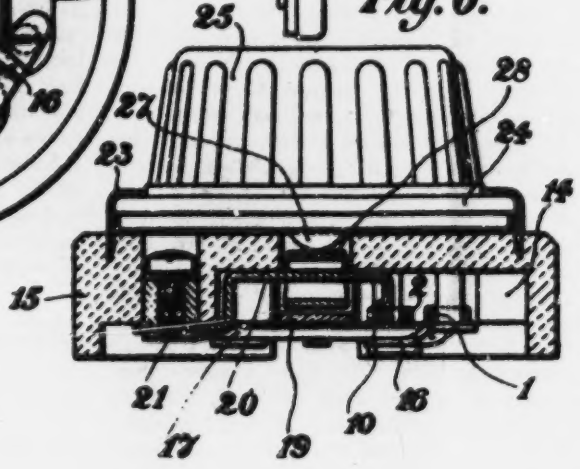


Fig. 6.



[This Drawing is a reproduction of the Original on a reduced scale]

Charles & Read Ltd Photo Litho

PATENT SPECIFICATION

Convention Date (Germany): Oct. 1, 1927.

298,073

Application Date (in United Kingdom): Aug. 16, 1928. No. 23,630/28.

Complete Accepted: May 9, 1929.

JUN 10 1929

COMPLETE SPECIFICATION.

Improvements in or relating to Electric Cigar-lighters.

I, ADOLF RUPPS, of German nationality, of Gartenstrasse 9, Tübingen, Germany (Assignee of ADOLF SIDLER & Co. G.m.b.H., a German Company, of Schaffhauserstrasse 69, Tübingen, Germany), do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to an electric cigar-lighter which is primarily intended for use in automobile vehicles. With those cigar-lighters wherein the member that carries the glow body is removable from the member that carries the leads and is permanently secured to the vehicle, there is the danger of overheating the glow body even when the latter is so arranged as to be visible.

In order to overcome this objection it has been proposed in specification No. 285,200 to use a cut-out device in conjunction with the electric lighter, the said device comprising a thermostatically-controlled switch or make-and-break device adapted to be included in the lighter circuit.

The present invention consists in an electric cigar-lighter of the character described in the specification above mentioned and in which the lighter is used in conjunction with an expansion capsule, the said capsule being resiliently pressed against a contact of the glow body, and receiving heat from the latter, and the arrangement being such that in the event of the glow body becoming overheated a contact on the capsule moves out of its normal electrical contact with a preferably adjustable contact member connected to one of the leads and so interrupts the circuit.

One constructional form of the invention is illustrated in the accompanying drawings, wherein

Fig. 1 shows a cigar-lighter mainly in central section and

Fig. 2 is a sectional plan on the line A—B in Fig. 1.

The cigar-lighter consists of a base plate *a* to be secured to the wall of the vehicle, with resilient contact members *b* and *c*, which are connected with the current-supply leads.

The resilient contact members *b* and *c* take up a position in an annular recess *d* in a hook *e*. In the recess *d* contact springs *f* and *g* are arranged opposite to one another. In the position of the parts shown they are in conducting communication with the resilient contact members *b* and *c*. The closing and opening of the circuit are effected by rotating the hood *e* upon the base plate *a*. In a tube *h* connected with the hood the glow body *k* is arranged in a readily exchangeable manner by means of a screw cap *i*. One pole of the glow body is electrically connected with the screw cap *i* or with the tube *h*, with which the contact spring *f* is in conducting communication. The other pole of the glow body *k* is connected with a contact disc *l*. Between this contact disc *l* and the other connection formed by the contact strip is arranged a thermostat, here shown as consisting of an expansion capsule *m*, which is connected with a contact member *n*. The contact strip *g* embraces the stylus of the contact member *n* with such clearance that only a collar of the contact member can come into conducting communication with the forked ends of the contact strip. To the collar of the contact member *n* is secured a spring *o*, which bears against the end wall of a cylindrical recess in the hood *e*, and presses the thermostat resiliently against the contact disc *l* and similarly presses the collar of the contact member *n* against the contact spring *g*. The position of the forked end of the contact strip *g* in relation to the contact member *n* can be adjusted by means of a screw *p*. The thermostat *m* is electrically insulated from the tube *h* by an intermediate layer *q*. When the glow body *k* is heated the heat is transmitted to the thermostat *m* through the contact disc *l*. The thermostat expands, and as soon as the dimension corresponding to the limiting temperature condition of the glow body is reached, the collar of the contact member *n* moves out of contact with the forked end of the contact strip *g* and the current is interrupted. After suitable cooling the parts then

[Price 1/-]

return to their original positions again.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An electric cigar lighter used in conjunction with a thermostatic cut-out device characterised by the feature that the said cut-out device consists of an expansion capsule which is resiliently pressed against a contact of the glow body, and which receives heat from the latter, the arrangement being such that in the event of the glow-body becoming overheated, a contact on the capsule moves out of its normal electric contact with a preferably adjustable contact member connected to one of the leads, and so interrupts the circuit.

2. The improved electric cigar-lighter, substantially as hereinbefore described with reference to the accompanying drawings.

Dated this 25th day of July, 1928.

MARKS & CLERK.

Redhill Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1929

[This Drawing is a full-size reproduction of the Original]

Fig. 1

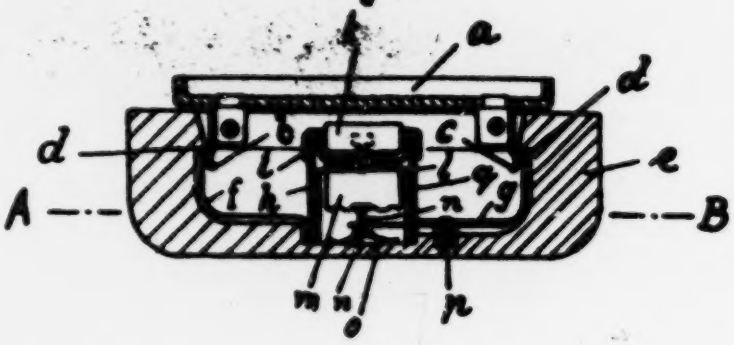
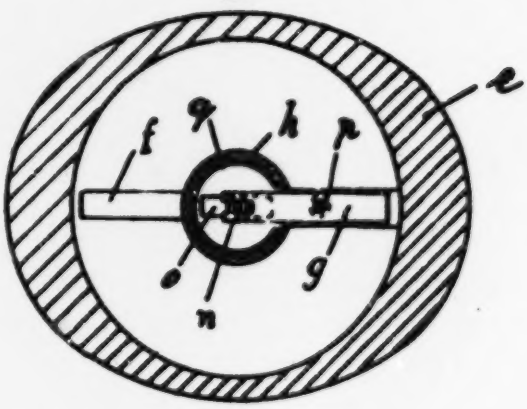


Fig. 2



Charles & Read

UNITED STATES CIRCUIT COURT OF APPEALS

For the Seventh Circuit.

I, Kenneth J. Carrick, Clerk of the United States Circuit Court of Appeals for the Seventh Circuit, do hereby certify that the foregoing printed pages, numbered from 1 to 498, inclusive, contain a true copy of the printed record, printed under my supervision and filed on the twenty-seventh day of October, 1939, upon which the following entitled causes were heard and determined:

The Automatic Devices Corporation,
Plaintiff-Appellee,

7103 *vs.*

Sinko Tool & Manufacturing Company,
Defendant-Appellant.

The Automatic Devices Corporation,
Plaintiff-Appellant,

7104 *vs.*

Sinko Tool & Manufacturing Company,
Defendant-Appellee,

as the same remains upon the files and records of the United States Circuit Court of Appeals for the Seventh Circuit.

In Testimony Whereof I hereunto subscribe my name and affix the seal of said United States Circuit Court of Appeals for the Seventh Circuit, at the City of Chicago, this 17th day of July, A. D. 1940.

Kenneth J. Carrick,
(Seal) *Clerk of the United States Circuit Court of Appeals for the Seventh Circuit.*

At a regular term of the United States Circuit Court of Appeals for the Seventh Circuit held in the City of Chicago and begun on the third day of October, in the year of our Lord one thousand nine hundred and thirty-nine, and of our Independence the one hundred and sixty-fourth.

The Automatic Devices Corporation,
Plaintiff-appellee,
7103 *vs.*
Sinko Tool & Manufacturing Company,
Defendant-appellant.

Appeal from the District Court of the United States for the Northern District of Illinois, Eastern Division.

The Automatic Devices Corporation,
Defendant-appellant.
7104 *vs.*
Sinko Tool & Manufacturing Company,
Defendant-appellee.

Appeal from the District Court of the United States for the Northern District of Illinois, Eastern Division.

And, to-wit: On the twenty-seventh day of April, 1940, there was filed in the office of the Clerk of this Court, the opinion of the Court, which said opinion is in the words and figures following, to-wit:

IN THE UNITED STATES CIRCUIT COURT OF APPEALS

For the Seventh Circuit.

Nos. 7103, 7104. OCTOBER TERM, 1939, APRIL SESSION, 1940.

THE AUTOMATIC DEVICES CORPORATION,
Plaintiff-Appellee,
vs.
SINKO TOOL & MANUFACTURING COMPANY,
Defendant-Appellant.

THE AUTOMATIC DEVICES CORPORATION,
Plaintiff-Appellant,
vs.
SINKO TOOL & MANUFACTURING COMPANY,
Defendant-Appellee.

Appeals from the District Court of the United States for the Northern District of Illinois, Eastern Division.

April 27, 1940.

Before EVANS, SPARKS and MAJOR, *Circuit Judges.*

SPARKS, *Circuit Judge.* The original complaint charged defendant with infringement of United States Patent to Mead, No. 1,736,544, issued November 19, 1929, on an application filed August 24, 1927. Subsequently, by supplemental complaint, plaintiff charged defendant with infringement of United States Patents to Johnson, No. 2,129,374, and to Cohen, No. 2,140,311, both of which were issued after the filing of the original complaint, on applications filed before that time on the respective dates of August 17, 1934, and July 23, 1932. Plaintiff does not manufacture or sell cigar lighters. It is in form a patent holding company for Casco Products Corporation, of Bridgeport, Connecticut, which has an irrevocable, royalty-free license and pays

plaintiff's expenses. The defenses were invalidity and non-infringement.

The District Court found that claims 2, 3 and 11 of the Mead patent were valid and infringed, and that all of the claims in issue of the other two patents were invalid for lack of invention. The defendant, in cause No. 7103, appeals from the ruling on the Mead patent; and the plaintiff, in cause No. 7104, appeals from the ruling on the Johnson and Cohen patents. The cases were consolidated in this court for argument.

The Mead patent relates to cigar lighters, or devices of a similar nature, wherein a member is arranged to be electrically heated to incandescence to be used for lighting cigars and the like. Its object is to produce a simple device which is more efficient and cheaper than those theretofore used.

It comprises a base unit and a plug removably mounted in it. The plug carries a resistance coil that may be heated to incandescence to serve as a lighting medium. The base has a socket for receiving the plug, both movable on the base between a position where the coil is energized and a position where the coil is de-energized. Normally the socket and plug are held in position where no current will flow through the heating coil. When the coil is to be heated, the plug and socket are moved to the energizing position, where they are held locked until the heating coil has reached the desired temperature. A thermostatic element, responsive to the temperature condition of the heating coil, releases the engagement of the socket and plug in locked position, whereupon they return to the original position so that the plug may be removed for use in lighting.

Illustrative of the disclosure is a lighter of the type suitable for use on dashboards for automobiles. It comprises a metallic supporting plate, which carries a base assembly of the lighter, comprising a fiber or other insulating plate adapted to be secured to the supporting plate.

Mounted in the center of the fiber plate is a socket carrier, which has a central hole, and on one side of which is an upstanding bracket.

Mounted on the socket carrier is a socket in the form of a cup-shaped metallic cylinder, having a closed bottom with a central opening through which it is rotatably secured above the carrier by means of a pivot screw. One side of

the socket cylinder has a perforation and the opposite side has a slot. The bottom of the socket has also a circular slot into which an upstanding lug of the socket carrier projects to limit the rotary movement of the socket around the pivot screw. A spiral biasing spring, having its inner end anchored in the head of the screw, and its outer end secured to the wall of the socket, tends to hold the socket in one end position as determined by the upstanding lug acting as a stop, this position corresponding to the off position of the lighter. The lower part of the socket surrounding the spiral biasing spring is somewhat bulged in order to accommodate the spring.

The upstanding bracket of the socket carrier has insulatingly mounted thereon a latch and release element, comprising a catch spring, having a folded end portion adapted to act as a catch when held in a bent-away position by means of a thermostatic element, such as a bimetallic strip. The catch spring and the bimetallic strip of the spring are suitably mounted on a supporting plate which is insulatingly secured to the bracket.

The several parts are readily assembled into a complete unit by screwing the latch unit to the upright part of the socket carrier, placing the pivot screw in the base opening of the socket, screwing it over the socket carrier on the fiber plate, and placing the spiral spring within the lower bulged portion of the socket. The base has two supply connections, or conductors, leading from a source of electric energy to a terminal extension of the socket carrier, and to the latch plate, respectively.

Within the socket there is removably mounted a plug unit completely assembled. It comprises a knob of insulating material, having a molded-in central square brass pin, provided with a longitudinal tapped perforation. On this knob is mounted a cylindrical metallic shell which is open at one end and closed at the other, having at the closed end a square hole fitting over the square pin of the knob. On one side of the side wall of this shell there is a perforation corresponding to the perforation in the socket, and on the opposite side of the shell there is an embossed protuberance adapted to fit into the slot of the socket and engage it, so that upon turning the shell by the knob, the socket will be rotated on the pivot screw.

Within the brass shell there is mounted a core which fits

the shell and has a longitudinal perforation, the lower portion of which fits over the square end of the knob pin. Extending transversely through the core, at right angles to the longitudinal perforation, is a second perforation in which is mounted a latch pin, one end of which is rounded for smooth engagement with the spring latch. Fitting into the open end of the shell, in front of the core, is a heating unit comprising a flat cup-shaped metallic container, having mounted therein an insulated spirally-wound heating coil, the outer end of which is connected to the walls of the cup, and the inner end of which is secured to a central screw. The coil and the screw are insulated from the cup by means of mica washers so that, by establishing circuit connections to the walls of the cup and to the screw, current may be sent through the coil. The coil with the screw is inserted through the perforation in the bottom of the cup and held in place with the mica washers by a nut.

The heating unit screw is arranged to be threaded into a tapped perforation in the latch pin. To assemble the plug the core is inserted in the brass shell and the two are secured over the square pin in the knob by a screw. The latch pin is inserted through the perforation of the shell into the perforation of the core, and the heating unit screw is screwed in place, thereby locking the latch pin in its position. Thus the latch pin will act as a terminal connection to the inner end of the heating coil while the shell will act as a terminal connection to the outer end of the coil. The walls of the cup of the heating unit are preferably tapered so as to wedge tightly on the inside of the shell when screwed down.

When the plug is inserted in the socket, the pin and the embossed protuberance slide into the slots of the socket, the protuberance serving to drive and rotate the socket when the knob is turned. The width of the slot of the shell is such that the latch pin makes no contacting connection with the socket walls.

Thus, with the plug inserted in the socket the rounded terminal end of the latch pin will project freely in space and no current will be passing through the heating coil.

In order to operate the lighter, the plug is turned to the on position. This brings the projecting end of the latch pin into engagement with the detent of the catch spring which is held pressed outwardly by the thermostatic ele-

ment which is in the form of a bimetallic strip. The socket with the plug is held in this position by the detent against the tension of the spiral biasing spring, and in this position a circuit is established from the supply wire through the socket carrier terminal, socket, shell, heating cup, through the heating coil to the screw, thence through the spring and bimetallic strip to the other supply wire. The thermostatic element is so arranged as to hold the latch pin in engagement with the pin until the coil is heated to incandescence. As the heating coil warms and becomes incandescent, the simultaneously heated bimetallic strip becomes deflected so that the end acting upon the detent turns inwardly towards the supporting plate thereby releasing the latch pin, thus causing the biasing spring to throw the socket with the plug to the off position, and the plug is ready for removal for lighting purposes.

Claims 2, 3 and 11 were the only ones relied upon.[1]

The accused device consists of a plug and socket member. The plug telescopes straight into the socket in any angular position, that is to say, there are no pin and slots to be aligned between the plug and socket. Two electrical terminals are provided about the socket, so that whenever the cordless plug member is in the socket two electrical contacts on the plug are in electrical engagement therewith.

The plug member has a metal body equipped on its inner end with a cup containing a heating coil which is brought to incandescence when the electrical circuit is closed by a straight push on the knob of the push button

1. "2. In a device of the class described, a removable heating member having an electrical heating unit, a socket for receiving and holding said heating member, electrical current supply terminals, means for moving said heating member to a position for establishing an energizing circuit to said heating unit, and means responsive to the temperature of said heating unit for interrupting said energizing circuit.

"3. In a lighting device for cigars and the like, a removable heating member having an electric heater, a support for receiving and holding said heating member, current supply terminals on said support, said heating member being movable on said support to a position where said heating unit is energized from said terminals and means responsive to the temperature of said heating unit for controlling the heating thereof."

"11. In an electric lighter of the class described, a base member, a heater member movably mounted on said base member, an electric heater on said heater member, electrical supply terminals on said base member, said heater member being movable between an energized position where a circuit is established from said terminals to said heater, and an off position where said circuit is interrupted, and automatic means for withdrawing said heater member from the on position to the off position upon heating of said heater."

switch mounted in the plug. The cup forms one contact which normally engages one socket contact, and the metal body, electrically insulated from the cup, forms the other contact and normally engages the companion socket contact. The connections between the plug and socket contacts are not disturbed in any way when the push button is pushed in or out to control the circuit.

The internal switch in the plug member of the accused device is provided with a claw-like thermostat which holds the switch for a sufficient time for the coil to heat, after the push button is thrust inwardly. This push button also serves as a knob for handling the plug. The thermostat is concealed in the plug body and is mounted on one of the switch contacts near the heating coil so as to grip the movable switch contact carried by the push button. As the thermostat warms, it expands and finally permits a spring in the plug to push the movable switch contact back into open circuit position.

Everything disclosed by defendant's device, except the thermostat, was taught by the prior art patent to Zecchini, No. 1,437,701. It disclosed a non-automatic wireless lighter in which the electric circuit was closed, after the insertion of the plug in the socket, by an inward thrust of the push button in the outward end of the plug. The absence of a thermostatic control of the switch required the user to continue the manual pressure on the push button, thus holding the circuit closed, until in his judgment the lighting coil in the end of the plug was sufficiently heated to light the cigar, or the like, at which time the entire plug was withdrawn for that purpose. If not withdrawn, however, the electric connection was opened whenever pressure on the push button was released.

Defendant's device and Zecchini both differ from Mead in this, that in the former the plug telescopes straight into the socket in any angular position, and there are no pin and slots to be aligned between the plug and socket. In the latter the reverse is true. Defendant's device further differs from Mead in the following respects: In the former, the thermostat is positioned in the plug between the push button and the heating unit, very near the latter. The socket is fixed in its position and cannot move. When the plug is inserted in the socket both remain stationary. The switch is closed by pressing the push button on the outer end of the plug. This causes a concealed screw head, or

the like, on the inner end of the push button, to snap into the claw-like thermostat, which holds the switch closed until the heat from the coil on the innermost end of the plug causes the thermostat claws to expand, thereby releasing the push button, and restoring it to its normal position.

Mead's thermostat is outside both the plug and the socket. A latch pin extends laterally and rigidly through the plug, and when the plug is inserted in the socket, the protruding ends of the pin engage slots in the socket, without which engagement the plug would not enter. It is not necessary that one end of the pin should extend more than slightly, if at all, beyond the periphery of the socket for, as we understand it, the only function of this end is to engage the plug with the socket, so that any rotary movement of the plug will produce a like movement of the socket. The other end of the pin, however, extends a greater distance beyond the periphery of the socket, for this end, upon rotation, latches with the spring which engages the thermostat, thereby closing the circuit and holding it closed until the heat from the lighting coil on the bottom of the plug causes the latch pin to be released. When the plug is inserted, its protruding handle is rotated to the right against the tension of a spring in the bottom of the socket. This in turn rotates both the plug and the socket, and causes the latch pin to engage the spring adjacent the thermostat, thus connecting the circuit. When the heating unit becomes incandescent the latch pin is released, and it with the plug and socket rotate to the left to their original position.

It is most difficult to determine precisely the point or points of novelty upon which plaintiff bases its claim of validity. The patentee said that his only expressed object was to produce a cigar lighter, or the like, which would be extremely simple, cheap in manufacture, and more efficient than prior devices of that character. By way of results he disclosed nothing more than the prior art had disclosed, except possibly those results which were produced by the co-operation of the thermostat, and yet plaintiff insists that Mead's invention is not the mere use of a thermostatic switch with a wireless cigar lighter. Assuming this to be true, it is obvious that the novelty, if any, must lie either in the construction of the device, or/and the method and means of its operation. But again, plaintiff insists that Mead produced the first automatic wireless cigar lighter known in the art in which

the members are brought into proper connection and held automatically until automatically released, by "the essential feature of **(Mead's) combination, being the spring and the thermostatic device." If this be true, it is clear that it was due to the automatic feature, which in turn was due to the thermostat, and Mead was entitled to the patent on the mere use of a thermostat switch with a wireless cigar lighter, providing, of course, he was not anticipated by art in the same or analogous fields. Since plaintiff does not contend for, but denies, such broad construction, it amounts to a concession, at least, that Mead does not anticipate every automatic wireless cigar lighter wherein a thermostat is used. Both Mead and defendant were privileged to use a wireless cigar lighter, to close an electric circuit, and to keep it closed and reopen it at a given time by means of the thermostats which they used. All of these elements and their uses, separately, were quite old, and unless appellant's device has clearly violated the disclosures of the patent there can be no infringement. Otherwise the result might prevent the use of any thermostat with any wireless cigar lighter, which plaintiff admits would not be authorized by the claims.

Plaintiff insists, however, that in every respect defendant has used the precise methods, means and principles which are found in the patent. The argument in support of this contention is centered about the means by which the circuit is connected and disconnected, and is not and cannot be based on the mere fact that the circuit is connected and disconnected. It is true that defendant's push button in the outer end of the plug is an equivalent of Mead's rotating knob, if we consider the ultimate result alone, for each ultimately causes the circuit to close, and both are manually operated, as are all switches where the closing is not thermostatically operable. Both means were quite old in the art, and there was no novelty in the mere use of Mead's manual rotary pressure to connect the circuit. If there is novelty in the disclosures, it must relate to the means which operate as a result of the rotary pressure, aside from the ultimate result of closing the switch, and we think the claims must be construed rather narrowly in order to avoid the prior art, if possible.

Plaintiff stresses as new the pin which engages the latch controlled by the thermostat. It passes through the

core of the plug and also through the socket walls so that when the knob is rotated to close the switch, it rotates not only the entire plug, including the heating unit and the entire socket, but also the pin which is attached to them, until the protruding end of the pin engages the latch controlled by the thermostat, both of which are located outside the socket on a bracket extending from the bottom of the socket carrier. Defendant's device has neither latch pin nor bracket, and its catch spring and thermostat are wholly within the plug. Its socket and plug, including the heating unit, remain stationary after the plug is inserted, except that part of the plug referred to as the push button and its attachments, together with the spring which controls them. They are not rotated but are pushed longitudinally of the plug, against the tension of the coil spring, until the end of the push button shaft engages the claw-like thermostat which is positioned adjacent the heating unit.

It is quite obvious that this construction is radically different from that of Mead, but plaintiff insists that the claims read upon the accused device, and that the principle disclosed by each is the same. We think the claims do not read upon the accused device in that defendant's heating member after insertion is not movable on a support to a position where the heating unit is energized. Plaintiff stresses the distinction between the heating member and the heating unit. The first is the plug with all that is attached to it before insertion, which includes the heating coil and the latch pin. The heating unit is comprised of the heating coil and the metal cap and screw which hold it in position on the inner end of the plug. It argues, therefore, that any movement of any part of the heating member after insertion, such as a thrust of the push button, is in fact a movement of the heating members within the meaning of the claims. We cannot accept this interpretation, for we think it would preclude the use of any automatic wireless cigar lighter, operable by a thermostat, without infringement.

Again, Mead differs from the accused device with respect to his spring which rotates the socket, plug and catch pin back to their normal positions when the pin is released from the thermostatic spring. As shown by the physical exhibit, it is a very thin band, coil spring, upon which the heating unit rests when the plug is inserted.

The center end of this spring is fastened to a threaded screw bolt, which extends through the center of the socket bottom and is firmly secured to and through the base board by means of a nut, thus permitting the socket to rotate upon the bolt. The outer end of the spring is connected to the socket wall, so that when the knob is rotated to connect the circuit, the band socket spring is thereby tightened, thus causing a reverse pull upon the latch pin. As the heating unit becomes heated, it not only tends to reduce the hold of the thermostatic spring upon the latch pin, but the heat also expands the socket spring, thereby increasing its tension, so that the latch pin is released, as claimed by Mead, by the effect of the heat upon either spring or both.

Defendant's device has but one spring. It is a coil of round metal, positioned longitudinally of and around the shaft of the push button, just as far from the heating unit as the device will permit. Theoretically we know that any degree of heat causes a relative expansion, and we suppose that the tension of appellant's spring is theoretically increased somewhat by the heat from the heat unit. However, the expansion must be extremely slight, and we are not convinced from the evidence that the amount is substantial, or that the successful working of the accused device is in any manner aided by that feature. If defendant had otherwise intended or desired, it could have placed its spring much nearer the heating unit, without trouble or expense, and procured the benefit, if any. We think there is no infringement.

It is obvious that there is nothing found in defendant's device which is not found in Zecchini, and in Copeland No. 1,844,206, and we think the same may be said with respect to Mead. Plaintiff, however, contends that Copeland's device is not an automatic wireless cigar lighter. With this we cannot agree. Of course, all cigar lighters have wires whether they be automatic or what is termed wireless, that is to say they have those wires which conduct electricity. We suppose, however, that a wireless cigar lighter is commonly understood to mean one in which all connection of the plug to the device is severed when the plug is withdrawn from the socket. But even so, we think Copeland is an automatic wireless cigar lighter. It is not only wireless in the popular sense, but it is plugless. It provides for the insertion of a cigar in the socket instead

of a plug, and the cigar is lighted before it is withdrawn from the socket. The cigar is inserted in a tubular guide and thrust inwardly until the circuit is connected, at which time the end of the cigar rests upon the heating unit, which heating unit remains in the socket. The connection is held until the heating unit becomes incandescent, and the cigar is lighted, at which time the heat from the heating unit operates the thermostat to release the cigar and its guide from the heating unit and they return to their normal position.

Before the Mead disclosure wireless cigar lighters were old, wherein the heating unit was on the end of the plug and the plug was removed for the purpose of lighting the cigar. All that Mead did was to cause the thermostat to operate on the plug in effect the same as Copeland permitted it to operate on the cigar. We do not feel justified in holding that this amounted to invention, in view of the fact that wireless plugs without the thermostat had been used so long, and in view of the further fact that the same principle of thermostatically disconnecting the circuit had been used in the manufacture and use of electric irons, and the like. We think the fields are quite analogous, and since all of Mead's elements were quite old in both fields and he made no use of any new principle, we think his disclosures amounted to nothing more than mechanical skill, and we think the claims herein relied upon are invalid.

COHEN PATENT No. 2,140,311.

It is unnecessary to describe this patent in detail. In general external appearance it resembles all other devices of that character. It differs from Mead in that Cohen secures his thermostat to the bottom of the socket, and when the plug is entirely inserted in the socket, the arms of the thermostat engage the end of the collar button stud which is attached to ~~*the bottom of the plug.*~~ (Deleted per order of June 18, 1940) *a spring-pressed slide in the socket.* (Inserted per order of June 18, 1940.) He also disclosed the alternative of placing the thermostat on the ~~*end of the plug*~~ (Deleted per order of June 18, 1940) *spring-pressed slide* (Inserted per order of June 18, 1940) so that it may engage a collar button stud which is fastened to the bottom of the socket.

Cohen relies on claims 3, and 14 to 26 inclusive. He

considers 3, 15 and 24 as typical,[2] and contends that they disclose three characteristic features: (1) An automatic wireless cigar lighter in which the circuit is closed by longitudinal movement of the plug in distinction to the rotary movement of Mead, which result is attained by disposing a thermostat in co-axial alignment with the plug; (2) the inclusion in either of the two main parts of the lighter, the holding device or the igniter unit, the cooperating parts of the thermostatically controlled switch. This he says makes possible a rigid interchangeability between the igniter units and the holding devices without the necessity of carefully balancing certain elements carried by one of the main parts of the cigar lighter against cooperating elements carried by the other; (3) the provision of auxiliary contact, so that if it is desired to manually close the

2. "3. In an electric cigar lighter, the combination of a base member; a socket on the base member; a plug removably mounted in the socket and longitudinally movable in said socket to a shallow inoperative position and into a deep operative position; a heating coil on said removable plug; means adapted to move the removable plug in the socket from the deep operative position to the shallow inoperative position preparatory to remove and use; and thermal responsive means in axial alignment with the plug for restraining said last-named means until the heating coil reaches a predetermined temperature."

"15. A cigar lighter having two parts one constituting a holding device and the other constituting an igniting unit removably supported by the holding device and having a heating element thereon, one of said parts having a pair of relatively movable members; means for normally urging the members apart; cooperating circuit-closing means mutually carried by the members; manually operable means for moving said members toward one another into position to close a circuit through the heating element, said circuit-closing means including heat-responsive means in heat-receiving relation with the heating element for opening the circuit when the heating element has attained its desired usable heat; and auxiliary contact means to close said circuit when the heat-responsive means is in open-circuit position and said parts are held together manually."

"24. A cigar lighter having two completely separable parts, one being a holder and the other an igniting unit supported by the holder but removable therefrom for use and carrying a heating element; means for feeding energizing current to the heating element including cooperating contacts on the holder and igniting unit; a switch having relatively movable contacts, manually operated means for closing said switch; and thermostatically controlled means associated with said switch and in heat-receiving relation with the heating element for causing the switch to be opened when the heating element is ready for use and to remain open until the next operation of said manually operated means, said switch and thermostatically controlled means being entirely carried by solely one and the same of the said two parts of the cigar lighter, so as to remain in predetermined operative relation relative to each other in a single operative assembly irrespective of the interchange of said igniting unit or holding device with other like igniting units or holding devices."

circuit after the thermostat has opened it, this may be done by manually pushing in the igniter unit, and manually holding it.

Very little need be said in regard to the third feature. It merely means that if the user desires to get another light before the thermostat has cooled off and returned to its normal position, he may use the device as a non-automatic wireless cigar lighter by manually closing the switch, and holding it until he thinks the heating unit is sufficiently hot to light the cigar. This particular feature is the very thing which Mead and all other automatic cigar lighters sought to avoid, because it was not conducive to safe driving. A return to such unsafe practices we do not regard as an improvement in the arts and sciences. There is nothing novel or advantageous in this feature.

With respect to the first feature, we think it is obvious that defendant does not infringe the Cohen patent. It is true that the circuit is closed in each by a movement longitudinal of the plug, but as stated in our discussion of Mead, who used the rotary movement, a mere longitudinal movement of the defendant's push button in the center of his plug, after the plug has come to rest and the contacts are all made, is not the equivalent of moving the entire plug in order to close the circuit.

(Deleted per order of June 18, 1940.)

~~*The second feature merely means that the Cohen thermostat may be secured either to the bottom of the socket or to the bottom of the removable plug or lighter, and is intended to cover defendant's device, wherein he places both the thermostat, and the element which it grips to hold the circuit closed, concealed within the plug, and it is operated by the push button which does not move the position of the entire plug or the heating coil. Whichever alternative of Cohen is used, the thermostat and the element which it clasps to hold the circuit closed are not in the same main part of the cigar lighter; that is to say, when the thermostat is attached to the base of the socket the collar button plug which it holds is attached to the igniter, and when the thermostat is attached to the igniter the collar button plug is attached to the socket. In defendant's device all are always concealed within the plug.*~~

(Inserted per order of June 18, 1940.)

With respect to the second feature, it is sufficient to say that it never appeared in the original specifications and drawings of Cohen No. 2,140,311. They never intimated the mounting of the thermostatic switch in the plug member, as practiced by the defendant, until long later by amendment under circumstances presently to be mentioned.

Even though defendant's elements might appear to be equivalents of Cohen, there are some circumstances disclosed by this record which convince us that it is not a mere question of equivalents. Defendant developed his device in September, 1933, and it was proven successful by a test on October 16, 1933. True, Cohen had filed his application on July 23, 1932, but his patent was not issued until December 13, 1938. In May or June, 1938, defendant was producing and selling a considerable number of its devices to many different automobile concerns. Shortly thereafter Cohen saw and studied it, and afterwards in September, 1938, while this suit was pending, he added to his pending application claims 14 to 26 inclusive, as they now appear. On November 19, 1938, while the present suit was pending, Cohen substituted a new preamble to his specification, in which he gave the purposes and objects of the invention, and for the first time recited that his thermostatic switch could be used in either the plug or the socket parts of the lighter, and that it would no longer be necessary to match the parts, and pointed out that the parts were in co-axial alignment.

This addition of a new preamble and claims seems to have been an effort to meet the differences, if any, between Mead and the accused device, and such practice seems not to be countenanced by either the statutes or the decisions. See *Railway Co.* v. *Sayles*, 97 U. S. 554; *Hobbs* v. *Beach*, 180 U. S. 383; *General Electric Co.* v. *Sangamo Electric Co.*, 174 F. 246. For this reason we think the District Court did not err in holding the claims of the Cohen patent invalid. We are also of opinion that this patent is invalid for lack of novelty.

JOHNSON PATENT No. 2,129,374.

Claims 1 and 4 of this patent are considered by plaintiff as typical.[3] Plaintiff says that the gist of these two claims is the provision in a cigar lighter having the usual holding device and igniter unit, of a single readily removable, unitary structure, carrying both the igniter coil and the bimetallic fingers in heat responsive relation thereto, the bimetallic fingers having latch portions adapted to hold the igniter unit in closed circuit position until the igniter coil reaches the proper temperature for use.

(Deleted per order of June 18, 1940.)

~~*There are no new elements disclosed here, and the patent differs from Cohen in that Johnson gives no alternative of placement of the thermostat, in the socket or on the plug. He places it on the inner end of the plug. This was fully disclosed by Cohen, and what we have said with respect to Cohen is quite applicable to Johnson. Furthermore, the date of Johnson's application which is his effective date, was long subsequent to the defendant's disclosure. These claims are invalid for the same reasons assigned by us in the ruling on the Cohen patent.*~~

(Inserted per order of June 18, 1940.)

There are no new elements disclosed here, and the patent differs from Cohen patent No. 2,117,232 in that Johnson places the exposed thermostat on the inner end of the plug, while in Cohen the exposed thermostat is fastened in the socket. What we have said with respect to the Cohen patent in suit is quite applicable to Johnson. Furthermore, the date of Johnson's application, which is his effective

3. "1. In a cigar-lighter, a base member; an igniting unit normally supported on but completely removable from the base member for use; a heating element mounted on the igniting unit for convenient removal and replacement; a circuit for conducting current to said heating element; manually operable means for closing said circuit to the heating element; and means carried by the removable heating element in permanent association therewith and responsive to the temperature of the heating element for opening said circuit."

"4. In a heating element for cigar lighters having an igniting unit of the type removable from a holding device for use; a manually movable support; a resistance coil mounted on the support; and a bimetallic strip secured to and carried by the support permanently in heat-conductive relation with the resistance coil and having a latch portion formed on the end thereof."

date, was long subsequent to defendant's disclosure. These claims are invalid for the same reasons assigned by us in the ruling on the Cohen patent in suit.

We think the District Court erred in sustaining the Mead patent and in ruling that its claims were infringed by the defendant. In this respect the decree is reversed and the cause is remanded. As to the Cohen and Johnson patents, the decree is affirmed.

Endorsed: Filed April 27, 1940. Frederick G. Campbell, Clerk.

And on the same day, to-wit: On the twenty-seventh day of April, 1940, the following further proceedings were had and entered of record, to-wit:

Saturday, April 27, 1940.

Court met pursuant to adjournment.

Before:

Hon. Evan A. Evans, Circuit Judge.
Hon. William M. Sparks, Circuit Judge.
Hon. J. Earl Major, Circuit Judge.

The Automatic Devices Corporation, *Plaintiff-appellee,*	}	Appeal from the District Court of the United States for the Northern District of Illinois, Eastern Division.
7103 *vs.*		
Sinko Tool & Manufacturing Company, *Defendant-appellant.*		

It is now here ordered, adjudged and decreed by this Court that the decree of the said District Court in this cause appealed from be, and the same is hereby reversed as to the sustaining of U. S. Patent No. 1,736,544 to Mead and in the ruling that its claims were infringed by defendant, and in this respect the said decree be, and the same is hereby remanded to the said District Court.

It is further ordered, adjudged and decreed by this Court that the said decree be, and the same is hereby af-

firmed as to U. S. Patent No. 2,140,311 to Cohen and U. S. Patent No. 2,129,374 to Johnson.

It is further ordered, adjudged and decreed that the costs of this appeal be taxed against The Automatic Devices Corporation.

The Automatic Devices Corporation,
Plaintiff-appellant,
vs.
Sinko Tool & Manufacturing Company,
Defendant-appellee.

7104

Appeal from the District Court of the United States for the Northern District of Illinois, Eastern Division.

It is now here ordered, adjudged and decreed by this Court that the decree of the said District Court in this cause appealed from be, and the same is hereby reversed as to the sustaining of U. S. Patent No. 1,736,544 to Mead and in the ruling that its claims were infringed by defendant, and in this respect the said decree be, and the same is hereby remanded to the said District Court.

It is further ordered, adjudged and decreed by this Court that the said decree be, and the same is hereby affirmed as to U. S. Patent No. 2,140,311 to Cohen and U. S. Patent No. 2,129,374 to Johnson.

It is further ordered, adjudged and decreed that the costs of this appeal be taxed against The Automatic Devices Corporation.

And afterwards, to-wit: On the tenth day of May, 1940, there was filed in the office of the Clerk of this Court, a petition for rehearing and brief in support thereof, which said petition and brief is in the words and figures following, to-wit:

IN THE

United States Circuit Court of Appeals

FOR THE SEVENTH CIRCUIT.

Nos. 7103, 7104. **October Term, 1939, April Session, 1940.**

THE AUTOMATIC DEVICES CORPORATION, *Plaintiff-Appellee,* vs. SINKO TOOL & MANUFACTURING COMPANY, *Defendant-Appellant.*	Appeals from the District Court of the United States, for the Northern District of Illinois, Eastern Division.
THE AUTOMATIC DEVICES CORPORATION, *Plaintiff-Appellant,* vs. SINKO TOOL & MANUFACTURING COMPANY, *Defendant-Appellee.*	Honorable William H. Holly, District Judge.

PLAINTIFF'S PETITION FOR REHEARING AND BRIEF IN SUPPORT THEREOF.

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IN THE

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Nos. 7103, 7104. October Term, 1939, April Session, 1940.

THE AUTOMATIC DEVICES CORPORATION, *Plaintiff-Appellee,* *vs.* SINKO TOOL & MANUFACTURING COMPANY, *Defendant-Appellant.*	Appeals from the District Court of the United States, for the Northern District of Illinois, Eastern Division.
THE AUTOMATIC DEVICES CORPORATION, *Plaintiff-Appellant,* *vs.* SINKO TOOL & MANUFACTURING COMPANY, *Defendant-Appellee.*	Honorable William H. Holly, District Judge.

PLAINTIFF'S PETITION FOR REHEARING.

The plaintiff, Automatic Devices Corporation, respectfully petitions the Court for a rehearing in the above-entitled case on the following grounds:

1. *As to the Mead Patent No. 1,736,544:*

(a) The Court overlooked the fact that the defense of invalidity was specifically waived by the defendant in the

lower Court, and the Mead patent should not have been held invalid, *as no question of error by the lower Court in holding the patent valid was properly before this Court.*

(b) On the issue of infringement, the Court overlooked the fact that it was old prior to Mead to close the circuit in a wireless cigar lighter either by movement of a so-called "push-button" on the igniter unit (Zecchini) or by movement of the entire igniter unit (Morris), and therefore the Court's holding that these were *not* equivalent was in error.

(c) In holding in effect that no invention was involved in the Mead patent in view of the prior Zecchini patent and the Copeland patent, the Court erred because—

(1) The Court incorrectly held that in Copeland "the heat from the heating unit operates the thermostat * * *." In fact, in Copeland it is *not* the heat from the heating unit (igniter coil), but instead the heat from a separate resistance coil wound around the thermostat (24), which operates the latter entirely independently of the heat from the heating unit *after the lapse of a predetermined time.*

(2) The Court overlooked the evidence that Mead's date of invention was prior to Copeland's.

(3) The Court overlooked the fact that the Copeland patent is in no event available as prior art, on account of its date of issuance being after Mead's filing date; but the Copeland application may be used by itself only to show prior invention or prior knowledge of the *same invention* as Mead, which it fails to do.

(d) The Court overlooked the fact that Mead evolved a new principle by controlling the operation of the thermostat by the temperature of the igniter resistance coil when the latter is ready for use, in distinction to the principles of the prior art, exemplified by electric irons, in which the operation of the thermostat is controlled by the tem-

perature of the body of the device (such as the sole plate) without regard to the temperature of the resistance coil.

(e) The Court overlooked the fact that Mead discloses that the thermostat may be in the form of a bimetallic spring (47) located in the socket in proximity to the igniter resistance coil, and hence the statement in the opinion that "Mead's thermostat is outside both the plug and the socket" is erroneous. There is a further misapprehension of plaintiff's position in regard to the action of the heat from the igniter coil on the return spring of the accused device.

(f) The Court misinterpreted plaintiff's position in regard to the Mead invention. Plaintiff's position is that a thermostat could be used with a wireless cigar lighter (as in the British patent to Smith) and yet not have the advantages of Mead's invention. The Mead invention is not merely for the use of any thermostat in any wireless cigar lighter, but is for the combination of elements co-operating as set forth in the Mead claims in suit.

2. *As to the Cohen Patent No. 2,140,311:*

(a) The opinion clearly indicates that the Court failed to understand the construction disclosed in the Cohen patent. This led the Court to erroneously hold that in the Cohen patent the arms of the thermostat engage the end of the collar-button stud "which is attached to the bottom of the plug"; whereas in fact the thermostatic arms engage a collar-button stud which is part of the switch located entirely in the socket and *not* attached to the plug.

(b) The Court erroneously found that in the substituted preamble Cohen "for the first time recited that his thermostatic switch could be used in either the plug or the socket parts of the lighter," whereas in fact the sub-

stituted preamble recited that the thermostatic switch parts "are carried by solely one and the same of the two separable parts of the cigar lighter," as clearly disclosed in the Cohen application as filed, in which the thermostatic switch parts are carried solely by the socket, which is one of the two separable parts (socket and plug) of the cigar lighter.

(c) The Court failed to appreciate that the feature of co-axial alignment of the thermostat with the plug was disclosed and claimed (Claim 3 of patent, Claim 4 of application) in the Cohen application as filed.

(d) Misled by a misunderstanding of the Cohen construction, the Court erred in holding that the longitudinal movement of defendant's knob is *not* the equivalent of moving the entire plug in order to close the circuit. The alternative ways of closing the circuit by moving a part of the plug (as in Zecchini) and moving the entire plug (as in Morris) were well known long prior to Cohen, and the Cohen claims are not limited to either construction as a means for closing the circuit.

(e) Apparently based on a misunderstanding of the Cohen disclosure, the Court erred in holding the Cohen art failed to disclose the combinations set forth in the patent invalid for lack of novelty when in fact the prior Cohen claims in suit, and the other claims of the Cohen patent are not in issue.

3. *As to Johnson Patent No. 2,129,374:*

(a) The holding that Johnson's invention "was fully disclosed by Cohen" was apparently based on the misunderstanding of the construction of the Cohen patent in suit. The Court incorrectly held that in the Cohen patent the thermostat was placed on the inner end of the plug, whereas in fact in neither of the alternative constructions

disclosed in Cohen is the thermostat carried by the plug, but the entire switch, including the thermostat and its co-operating contact, is solely in the socket.

(b) The Court overlooked the fact that in the Johnson invention for the first time in the art, the igniter resistance coil and the thermostat arms are mounted on a single unit removably carried by the plug.

(c) The Court overlooked the fact that in the 1933 device of defendant the unit carrying the igniter resistance coil and the thermostatic arms is not removable as a unit from the plug, but the record shows that it was necessary to break the parts in order to remove the unit.

Respectfully submitted,

DRURY W. COOPER,
THOMAS J. BYRNE,
HENRY M. HUXLEY,
Counsel for Plaintiff.

BRIEF IN SUPPORT OF PETITION.

It is with considerable reluctance that we add to the burdens of the Court by filing a petition for rehearing, but in the present case the Court's opinion so clearly indicates a mistaken understanding of the fact premises that we believe, both in fairness to the plaintiff and to the Court itself, that these mistaken premises should be pointed out; and it is submitted that with a correct understanding of the facts and the actual constructions involved, the Court would reach a different conclusion on the issues of validity and infringement of the three patents in suit.

While, of course, commercial success in itself by no means necessarily spells invention, it is nevertheless a fact that plaintiff's licensee, the Casco Products Corporation, relying upon the protection of the primary Mead patent, has been encouraged to expend large sums of money and years of development work in making this invention available to the public in a highly satisfactory form, which resulted in building up a business amounting to the annual sale of approximately one million of the patented automatic cigar lighters. (Sheet 3 at end of Appellee's Brief, No. 7103.)

All of this came about from the fact that the President of plaintiff's licensee company, saw one of the original Mead commercial devices and was so impressed by the new principle there exemplified that after careful investigation of the Mead patent, it was acquired and made the cornerstone on which the later commercial developments were based. (Rec. 68, 70.) The automotive trade and the public

were thus given the benefit of a type of cigar lighter never in existence prior to the Mead invention.

This new type, which has become of vital importance to the automotive industry, substantially replaced the old non-automatic type. That competitors have felt themselves obliged to adopt the new type, is indicated not only by the defendant's activities in the present case, but also by those of another competitor which has been sued in another circuit, as already pointed out by the defendant in "Appellant's Reply Brief" in No. 7103, pages 28 to 35 inclusive.

Manufacturers are encouraged to invest their capital in advancing the progress of the arts by giving them a patent monopoly for a limited period on meritorious inventions, and if, as it is believed to be true in the present instance, this limited monopoly is struck down without proper basis for so doing, the very incentive for development provided by our patent system is virtually destroyed.

We shall next consider the various points set forth in the petition.

1. As to the Mead Patent No. 1,736,544.

(a) *Defendant's Waiver of Defense of Invalidity:*

Defendant's position in the lower Court was stated in its petition for rehearing as follows (Rec. 244):

> "• • • The principal and primary defense as to the Mead patent, as will be clear from defendant's briefs, was non-infringement and **we did not urge that the patent be held invalid for lack of invention.** Plaintiff, on the other hand, gave the mistaken impression that defendant was merely taking the position that there could be no invention in the use of a thermostat with a cigar lighter because it is old to use thermostats in other types of heating appliances. **At no time was this defendant's contention.**
>
> "On page 8 of plaintiff's reply brief it is stated: 'We cannot see that defendant has made any sound argu-

ment leading to a logical conclusion of invalidity in the present case.' This statement is true so far as the Mead patent is concerned because our argument was on non-infringement and not invalidity." (Emphasis ours.)

This shows that the defense of invalidity of the Mead patent is not even before this Court, since the defendant itself in effect admitted that the decision of the lower Court as to invalidity was correct.

The principle that a defendant cannot abandon a defense in the lower Court and then attempt to avail itself of this abandoned defense in an Appellate Court is clearly set forth in *United States National Bank of New York* v. *First National Bank of Little Rock, et al.* (C. C. A. 8), 64 Fed. 985, 992. To the same effect are *Renwick* v. *United States* (C. C. A. 7) 87 Fed. (2d) 123, 124; *Arkansas Anthracite C. & L. Co.* v. *Stokes* (C. C. A. 8) 2 Fed. (2d) 511, 515.

It will be remembered that at the argument this particular point was discussed by the Court (speaking by Judge Evans) and counsel.

It is submitted that the Court should not have held the Mead claims in issue invalid, when in the final proceedings in the lower Court the defendant itself admitted the validity of these claims. Thus there was no error on this point for this Court's review.

(b) *Infringement by the Accused Device in which Part of the Plug is Moved to Circuit Closing Position:*

The Court's decision of non-infringement of the Mead patent was apparently founded upon the proposition that in the Mead illustrated embodiment of his invention literally the entire plug is moved to circuit closing position, whereas in the defendant's accused device only a part of the plug is so moved.

The Court's premise, set forth particularly on pages 9 and 13 of the opinion, that movement of the entire plug and movement of part of it are not equivalents is clearly incorrect in view of the two prior art patents, Morris No. 1,376,154 and Zecchini No. 1,437,701, the drawings of which are reproduced at the end of this brief.

The Morris patent shows a wireless cigar lighter in which the plug (Fig. 1) carrying the igniter resistance 16, is removably mounted in the socket 1 (Fig. 3). Fig. 5 shows the plug in its normal open circuit position in the socket. When the circuit is to be closed the entire plug is pushed to the left against the tension of spring 28 in the socket to bring the contact 17 on the plug into engagement with the live contact 7 on the socket to complete the circuit through the igniter resistance 16.

An animated model and chart showing the drawings of the Morris patent were referred to at the argument under the stipulation in this case that any models and charts used in certain other litigation could be referred to (Rec., 59).

In Zecchini the circuit is closed within the plug by movement of the push-button 16 and its attached rod 15 against the tension of the spring 17, so that rod 15 engages the contact rod 13. In Zecchini, therefore, only a part of the plug is moved to close the circuit.

That both movement of the entire plug and movement of part of it, to close the circuit, were known in the prior art, was also stated in Finding 6 of the lower Court (Rec. 257):

> "6. That in wireless cigar lighters of the prior art, no electrical circuit was established through the heating element when the plug was in normal position in the socket. That when it was desired to use the cigar lighter it was not only necessary for the operator to manually **move the plug, or a part thereof**, in the

socket to establish an electrical connection through the heating element, but also to manually **hold the plug, or a part thereof,** in such position until the heating element became sufficiently hot to light a cigar or cigarette."

It was thus equally well known prior to Mead that either the whole plug (as in Morris), or part of it (as in Zecchini), could be moved to close the circuit. At the time of Mead these were clear equivalents and available to the art as alternative ways of closing the circuit. In view of this, it is submitted that there is no justification for *reading into* the Mead claims a limitation (which is not found in the claims themselves) that the *entire* plug must be moved.

Because Mead in his illustrated embodiment of his invention, showed movement of the *entire* plug, as in Morris, he did not thereby exclude himself from the benefits of his invention when practiced by movement of part of the plug, as in Zecchini.

The Court stated in effect that if the limitation were not read into the Mead claims, that the *entire* plug should be moved, this "would preclude the use of any automatic wireless cigar lighter, operable by a thermostat, without infringement." (p. 9.)

That this conclusion is unsound is substantiated by the fact that in the later Smith British Patent No. 285,200 (Rec., 481), as explained more in detail in Appellee's Brief in No. 7103 (pp. 31, 32), there is a wireless cigar lighter operable by a thermostat, but in which the circuit is closed and opened without any movement of either the whole or any part of the removable plug 25. The closing of the circuit is performed in Smith by a switch lever 19 on the base of the lighter. This lever 19 must be manually held in closed circuit position while the igniter coil is being heated. Smith's thermostatic wireless cigar lighter admittedly would not infringe the Mead claims in issue.

The Mead claims cover a construction in which the plug (not necessarily the *entire* plug), is moved to circuit closing position and automatically held there by a latch or detent, which becomes ineffective by the action of a thermostatic element directly responsive to the temperature of the igniter coil, so that when the latter reaches the proper temperature for use, the plug automatically returns to open circuit position.

The defendant should not be permitted to escape infringement of the Mead claims merely because it uses the prior Zecchini way of closing the circuit, instead of the equally known Morris way.

(e) *The Copeland Patent No. 1,844,206:*

The Court held (p. 10):

> "It is obvious that there is nothing found in defendant's device which is not found in Zecchini, and in Copeland No. 1,844,206, and we think the same may be said with respect to Mead."

This conclusion is believed to be clearly based on erroneous premises.

(1) The Court was in error when it stated (p. 11) that in Copeland "the heat from the heating unit operates the thermostat * * *."

In Copeland the thermostat marked 24 in Fig. 2 (Rec., 440) is *not* operated by the heat of the igniter coil 14, but is operated by the heat generated by an extra resistance coil (not numbered) wound around the thermostat.

As stated in the Copeland specification (p. 1, beginning line 28):

> "* * * the said circuit may be opened automatically **after the lapse of the required time to light the cigar** or cigarette, through a thermostatic device."

In Copeland's construction there would be no point in

controlling the thermostat by the transfer of heat from the igniter coil nor according to the degree of heat—*i. e.*, the temperature—of the igniter coil, because all Copeland was interested in was **keeping the igniter coil hot for a sufficient length of time to light a cigar resting upon the igniter coil.**

In Mead the thermostat is operated when the igniter coil *reaches* an igniting temperature, regardless of the time this takes, while in Copeland the igniter coil is *kept at an igniting temperature* for a sufficient length of time to light the cigar.

(2) The Court apparently entirely overlooked the evidence in this case discussed beginning page 46 of Appellee's Brief in No. 7103, that Mead's date of invention was in fact prior to Copeland's best available date, which was the date of application for his Patent No. 1,838,363, to wit, March 9, 1927 (Rec., 435).

We shall not here review the evidence to which attention was called in our brief, but it is submitted that a review of the fact situation which was not passed upon by the District Court, inasmuch as the latter held that the Copeland patents in any event were immaterial, will show that Mead had his invention prior to January 1, 1927, and that Copeland therefore does not antedate Mead.

(3) The Court apparently overlooked the fact that regardless of whether the date of the Mead invention or the Copeland invention was first, the Copeland patent is not available as part of the prior art, since it was issued long after Mead's date of application, and in fact even after the date of Mead's patent. Even if Copeland's date of invention were earlier than that of Mead, the Copeland application as filed could only be used as evidence to show prior knowledge or prior invention of the *same* invention

that Mead had. The law governing this point was pointed out on pages 42 and 43 of Appellee's Brief in No. 7103.

The effect of combining a prior art patent with the pending application of Copeland, which was in the confidential files of the Patent Office until the patent actually issued, in order to adjudge invalidity of Mead's claims, would be to charge Mead with knowledge that he could not have had. We submit that this would manifestly be improper.

(d) *Mead's New Principle:*

In holding in effect that the Mead invention involved the same principles as shown, for example, in prior art thermostatically controlled electric irons, it is submitted that the Court overlooked a vitally important distinction between the operation of a thermostatically controlled electric iron and that of the Mead cigar lighter.

In electric irons and the like a resistance coil is heated by the electric current and this in turn transmits heat to the body of the device, as, for example, the sole plate of an electric iron. The temperature of the resistance coil is immediately brought to its maximum, and the heat is gradually transmitted to the sole plate. When the sole plate becomes heated a thermostat may be operated to open the circuit in response to the temperature of the sole plate, entirely irrespective of the temperature of the resistance coil.

The Mead principle is set forth in the claims which provide that the opening of the circuit is "responsive to the temperature of the heating unit,"—which, of course, is the igniter resistance coil—a condition which is not present in thermostatically controlled electric irons.

In defendant's construction the principle is the same as Mead's, for the thermostatic fingers respond in exactly the same way to the temperature of the igniter resistance coil when the latter is hot enough for use.

(e) *Location of Mead's and Defendant's Thermostats:*

In discussing the disclosure of the Mead patent, the Court incorrectly held (p. 7) that "Mead's thermostat is outside both the plug and the socket."

Mead discloses two thermostats, either or both of which may be used. One is the bimetallic element 54 referred to in the Court's opinion, and the other is the bimetallic element 47 located within the socket near its bottom and closely adjacent to the igniter resistance coil 83.

After stating in the paragraph beginning line 112 of page 3 of the Mead specification (Rec., 285), that the spring 47, or the spring 54, or both, may be made of thermostatic or bimetallic material, the specification states (p. 4, line 12):

> "Cigar lighters utilizing either one of the foregoing constructions operate very satisfactorily."

The Court apparently failed to appreciate that Mead disclosed that the spring 47 when made of bimetallic material acts as a thermostat, located in the socket in close proximity to the igniter coil.

On page 10 of the opinion, it is stated, "Defendant's device has but one spring." This statement is not correct. In defendant's device there is not only the coiled return spring referred to in the opinion but the detent fingers which engage the movable contact of defendant's plug to hold the circuit closed are also springs, made of thermostatic bimetallic material. When the igniter coil is heated to a predetermined temperature this heat causes these thermostatic detent spring fingers to expand and lose their holding function, thus allowing the return spring to act to move the plug to open circuit position.

The paragraph in the middle of page 10 of the opinion does not correctly state plaintiff's position, as we have

never urged that in defendant's device the heat has any thermostatic effect upon the coiled return spring.

It is believed that the Court's conclusion of noninfringement stated at the end of the paragraph in question is based upon a misapprehension, since in defendant's device it is the thermostatic spring fingers, rather than the return spring, which respond to the temperature of the igniter coil. In both Mead and defendant's device, there is a thermostatic spring in close proximity to the igniter coil and responsive to the temperature of the latter, so that the circuit is opened when the igniter coil reaches the proper temperature for use.

(f) *Plaintiff's Position Regarding Mead Patent:*

The Court appeared to misinterpret our position in regard to the Mead invention. The opinion states (p. 7):

> "It is most difficult to determine precisely the point or points of novelty upon which plaintiff bases its claim of validity."

The plaintiff endeavored to make clear that the Mead invention is not merely using a thermostat in a wireless cigar lighter, although as a matter of fact there is no prior art patent which shows this.

It might well be correct that any such claim as "A wireless cigar lighter having a thermostat" would be so broad and vague as not to make a patentable distinction over various prior electrical devices using thermostats.

Mead's claims do not cover any such mere use of a thermostat in a wireless cigar lighter, but do cover the very gist of Mead's inventive contribution to the art, which consists in automatically holding a manually operable igniter plug (not necessarily the *entire* plug) in circuit closing position, and then by the action of thermostatic means responsive to the temperature of the ig-

niter coil, causing the plug to return to its open circuit position.

This construction and mode of operation are precisely those of the accused device and are not present in a device such as shown in the British Smith patent (which, it will be recalled, is not prior art as to Mead), where a thermostat is used in a wireless cigar lighter, but the parts and co-operation thereof are not those of the Mead claims, as we have pointed out (*supra*, p. 10).

While Mead did *not* claim as his invention the mere use of a thermostat in a wireless cigar lighter, he *did* claim broadly the elements necessary for his invention, and it is submitted that the Court erred by reading into the claims unnecessary details shown in Mead's illustrated embodiment, thus allowing defendant's device, operating precisely on the same fundamental principle as Mead's, to escape a holding of infringement.

2. As to the Cohen Patent No. 2,140,311.

(a) *The Court's Misunderstanding of the Cohen Construction:*

The Court's opinion stated in reference to the Cohen patent (p. 11):

> "• • • the arms of the thermostat engage the end of the collar-button stud which is attached to the bottom of the plug. He also disclosed the alternative of placing the thermostat on the end of the plug so that it may engage a collar-button stud which is fastened to the bottom of the socket."

Both of these statements are incorrect.

It is believed that the construction will be clearly understood by referring to Sheet 1 of the drawings at the end of Appellant's Brief in No. 7104. Fig. A shows that the orange thermostatic arms 32′ are attached to a movable cup or plate contact in the socket member, so that upon

movement to the left, the ends of the orange thermostatic members engage the green collar-button contact rigidly mounted in the socket.

It is clear from Fig. A that the thermostatic elements are *not* attached to the plug.

The form of the invention illustrated in the drawings of Sheet 1 of the brief is shown on Sheet 2 of the Cohen patent. (Rec. 298.)

There is an alternative form shown on Sheet 1 of the Cohen patent in which the bimetallic thermostatic fingers are attached to the stationary central contact in the socket and the collar-button contact is mounted on the movable cup or plate 42, which is *not* attached or fastened to the plug.

In neither embodiment of the Cohen invention are the bimetallic fingers or the collar-button stud attached to the plug, the plug being as shown in Fig. A of Sheet 1 at the end of appellant's brief.

In the Cohen construction, the thermostatic fingers, the collar-button contact, and the controlling spring, are all located in the socket member, which is one of the two main parts of the cigar lighter.

The Court's apparent misunderstanding of the Cohen construction, indicated by incorrectly holding that the thermostatic fingers or the collar-button stud are on the plug, leads to a misconception of what the Cohen invention really is.

If the Court were right that the Cohen patent disclosed the thermostatic switch, partly on the plug and partly in the socket, the Court's conclusion with regard to Claims 14 to 26 inclusive would be entirely correct, but the point of these claims is that the thermostatically controlled switch is located *entirely* in one and the same of the two

main parts of the cigar lighter, Cohen specifically showing this entire switch in the socket.

What defendant did in its accused device was squarely within the Cohen claims, the defendant mounting the switch entirely in the plug, which is one of the two separable parts of the lighter. Infringement seems clear.

(b) *The Substituted Preamble:*

The Court's opinion clearly indicates that the Court thought that the substituted preamble appearing in the Cohen patent was directed to a different disclosure from that contained in the Cohen application as filed, and would thus be "new matter."

The opinion states (p. 14):

> "* * * Cohen substituted a new preamble to his specification, in which he gave the purposes and objects of the invention, and for the first time recited that his thermostatic switch could be used in either the plug or the socket parts of the lighter * * *"

If it were correct that "new matter" was added by this preamble, then the Court's conclusion that the patent would be invalid as to claims based on this new matter, would be quite correct, but this is the wrong premise.

It is obvious from the drawings of the Cohen patent that from the beginning Cohen did in fact show the entire thermostatic switch in one of the two main parts of the cigar lighter.

It is believed that with the correction of the Court's understanding of the Cohen construction, it will be clear that every word of the new preamble (which was solely for the purpose of better indicating the nature of Cohen's disclosed invention) was supported by the original disclosure.

Claim 24, which is typical of the claims directed to the

location of the thermostatic switch, clearly reads on Cohen's original disclosure as indicated in the drawings, in which the switch and thermostatically controlled means are entirely carried by solely the socket, which is "one and the same of the said two parts of the cigar lighter."

The fact that some of the claims were added after defendant's device was on the market is immaterial in this case, since they were based on the original disclosure. It will be remembered that this point was particularly discussed by the Court and counsel during the oral argument. Note the decision of this Court in *American Steel Foundries* v. *Damascus Brake Beam Co.*, 267 Fed. 574, 577.

By having the entire thermostatic switch in one of the two main parts of the cigar lighter, as did Cohen, the advantage of interchangeability with the other main part of the cigar lighter was inherent in the construction, and, of course, it is elementary that a patentee is entitled to all the advantages of his invention even if not appreciated by him.

Kuhlman Electric Company v. *General Electric Company* (C. C. A. 7), 147 Fed., 709, 712.
Horton Mfg. Company v. *White Lily Mfg. Co.* (C. C. A. 7), 213 Fed., 471, 475, 476.

It is believed that on account of the Court's misunderstanding of exactly what the Cohen construction is, the Court was led to an incorrect conclusion in regard to the substituted preamble, the added claims of the patent, and the question of infringement thereof.

(c) *Co-axial Alignment:*

The Court failed to appreciate that the feature of axial alignment of the thermostat with the plug was clearly disclosed in the application as filed, and Claim 3 of the patent originally appeared in identical form as Claim 4 of the application.

(d) *Plug Movement:*

On page 13 of its opinion, the Court fell into the same error in regard to the movement of the *entire* plug, in distinction to part of it, that was made in connection with the Mead patent, and which we have discussed above (*supra*, p. 8).

As we have pointed out, it was fully appreciated in the prior art that either the entire plug or part of it might be moved to effect the closure of the circuit.

The movement of the *entire* plug is in no way an essential of the Cohen claims, which depend for their novelty upon the other features which we have pointed out.

(e) *Novelty:*

The Court's opinion (p. 14) held:

> "• • • We are also of opinion that this patent" (Cohen) "is invalid for lack of novelty."

This statement might be taken to mean that the Cohen claims, not only those in issue, but all of the claims, are invalid on the ground that they do not define novel subject matter.

We believe that this conclusion is fundamentally erroneous because we have been quite unable to discover, nor does the opinion mention, any art prior to Cohen which discloses a plug, having in-and-out movement between a shallow and deep position, and in which a thermostat in axial alignment with the plug is used for restraining the action of the return spring which opens the circuit, until the heating coil reaches a predetermined temperature, all as set forth in essence in Cohen's Claim 3.

Furthermore, there is no prior art in which there is a thermostatic switch with its various co-operating parts all located entirely in one of the two main parts of the cigar lighter.

It is submitted that the Court's holding of invalidity based upon lack of novelty must have been founded upon the incorrect premises as to what the Cohen construction really is.

3. As to the Johnson Patent No. 2,129,374.

(a) *Relation to Prior Cohen Patent in Suit:*

The misunderstanding of the Court in regard to the construction of the Cohen patent in suit, which we have already discussed (*supra*, p. 16), led to an incorrect conclusion in reference to the Johnson patent considered in relation to the Cohen patent.

In the Cohen patent we have shown that there is no disclosure of having the thermostatic fingers on the igniter plug.

Since the Court's understanding apparently was that in Cohen the thermostatic fingers *are* on the plug, this incorrect premise no doubt led to the conclusion of invalidity of the Johnson patent.

(b) *The Johnson Invention:*

Johnson for the first time in the art mounted the igniter resistance coil and the thermostatic fingers on a single unit, which in turn was removably mounted on the plug for replacement purposes, an important practical feature.

(c) *Defendant's 1933 Device:*

We shall not reargue the question of priority of defendant's 1933 device, but the Court overlooked that in said device, the unit carrying both the thermostatic fingers and the igniter coil, was not readily removable, and for this reason the replaceability of a new unit was of course

impossible. In fact, when an attempt was made to remove the unit from the device, the parts were broken (Rec. 95).

It is submitted that since the Court did not appreciate the non-removability of defendant's early construction, its conclusion that the Johnson patent is invalid, was erroneous.

As to infringement, the accused device has Johnson's readily removable unit, and in every respect clearly responds to the Johnson claims.

Conclusion.

It is urged that the petition for rehearing should be granted in this case, since, as we have pointed out in detail, important parts of the record appear to have been overlooked and the conclusions of the Court in regard to all three patents in suit were based on incorrect premises in reference to the constructions and modes of operation of either the patents in suit themselves or the prior art.

It is submitted that these errors, and the conclusions resulting therefrom, should be corrected.

Respectfully submitted,

Drury W. Cooper,
Thomas J. Byrne,
Henry M. Huxley,
Counsel for Plaintiff.

May 9, 1940.

Pl. Ex 60
in Eq. 15,336

J. M. MORRIS.

ELECTRICAL LIGHTING DEVICE FOR CIGARS AND THE LIKE.

APPLICATION FILED OCT. 2, 1919.

1,376,154. Patented Apr. 26, 1921.

FIG. 1

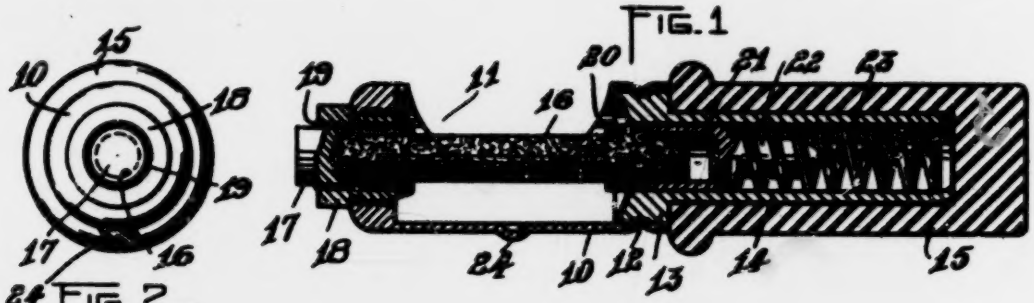
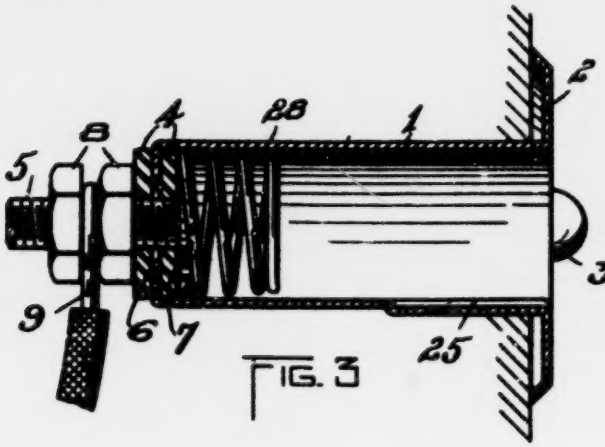


FIG. 2

FIG. 3



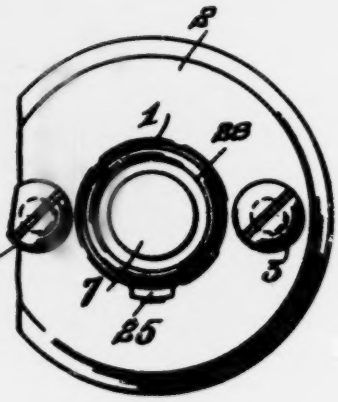
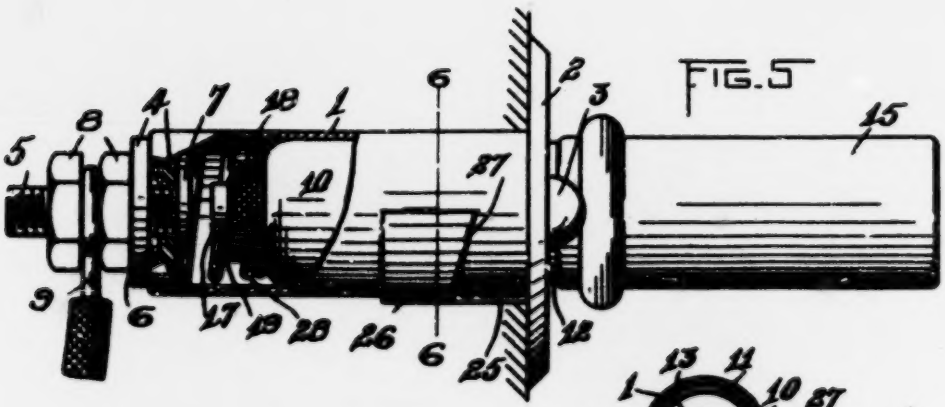


FIG. 4

FIG. 5



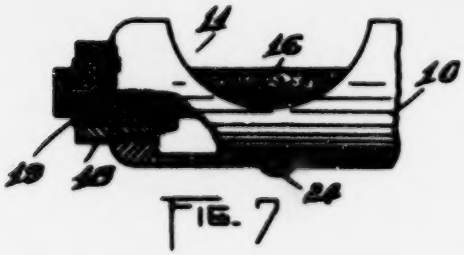


FIG. 7

FIG. 6

INVENTOR

Joshua M. Morris

BY

Davis & Davis

ATTORNEYS

Rec. 545 374

A. ZECCHINI.

ELECTRIC LIGHTER.

APPLICATION FILED APR. 15, 1921.

1,437,701.

Patented Dec. 5, 1922.

2 SHEETS—SHEET 1.

FIG. 1

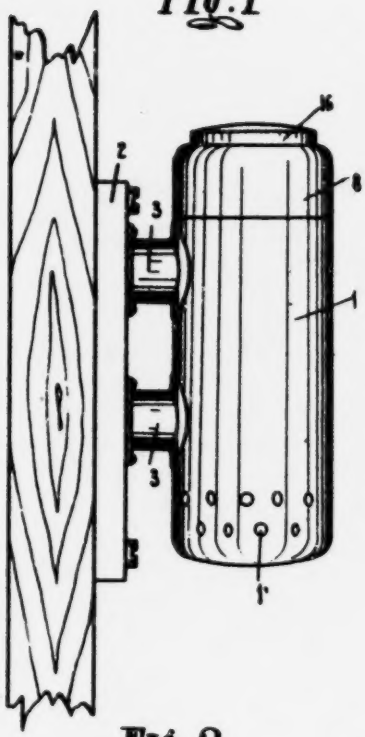


FIG. 3

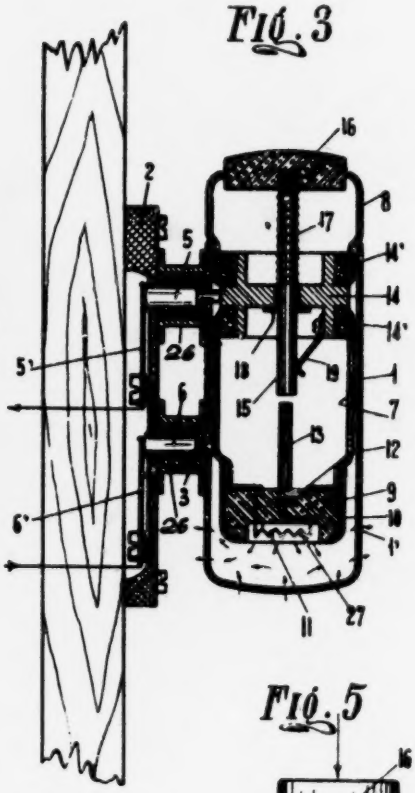


FIG. 2

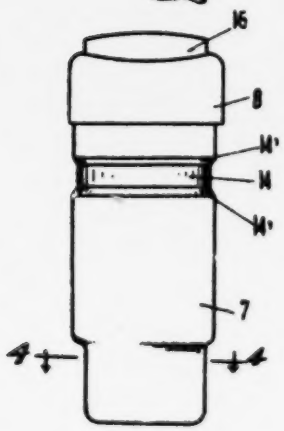
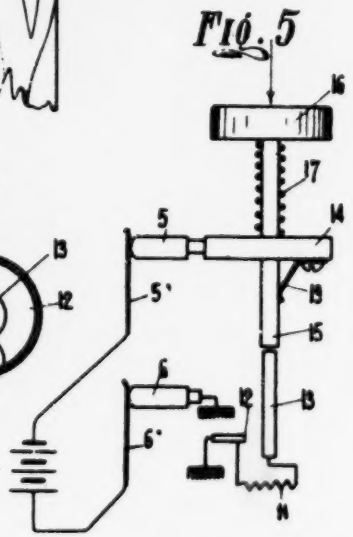


FIG. 4

FIG. 5



Inventor:-
Alfredo Zecchini
By Lawrence Langner
Atty.

Endorsed: Filed May 10, 1940. Frederick G. Campbell, Clerk.

And afterwards, to-wit: On the thirteenth day of May, 1940, there was filed in the office of the clerk of this Court, an answer to petition for rehearing, which said answer is in the words and figures following, to-wit:

IN THE

United States Circuit Court of Appeals

FOR THE SEVENTH CIRCUIT.

Nos. 7103, 7104. October Term, 1939, April Session, 1940.

THE AUTOMATIC DEVICES CORPORATION,
Plaintiff-Appellee,
vs.
SINKO TOOL & MANUFACTURING COMPANY,
Defendant-Appellant.

THE AUTOMATIC DEVICES CORPORATION,
Plaintiff-Appellant,
vs.
SINKO TOOL & MANUFACTURING COMPANY,
Defendant-Appellee.

Appeals from the District Court of the United States, for the Northern District of Illinois, Eastern Division.

Honorable William H. Holly, District Judge.

ANSWER OF SINKO TOOL & MANUFACTURING COMPANY, DEFENDANT, TO PLAINTIFF'S PETITION FOR REHEARING.

RUSSELL WILES,
BERNARD A. SCHROEDER,
GEORGE A. CHRITTON,
Counsel for Defendant.

CHRITTON, WILES, DAVIES, HIRSCHL & DAWSON,
Attorneys for Defendant.

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Copeland Patent No. 1,844,206	5
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CASES CITED.

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District Judge.

ANSWER OF SINKO TOOL & MANUFACTURING COMPANY, DEFENDANT, TO PLAINTIFF'S PETITION FOR REHEARING.

MAY IT PLEASE THE COURT:

Plaintiff has filed a petition for rehearing with avowed reluctance, which is easy to understand. This Court received six briefs by the parties, prior to the hearing, and graciously granted double the usual time for oral argument. There is no pertinent point or fact in the petition

for rehearing that was not fully covered by the briefs or oral argument.

We submit that no reasonable person can read the carefully formulated decision handed down by this Court, April 27, 1940, explaining fully the intricate construction of the devices and patent disclosures, without being impressed by the Court's complete understanding of the facts and issues involved. It is further submitted, contrary to the allegations in the petition, that the Court did not overlook, misinterpret, or fail to understand a single *vital* fact or issue. The decision as it stands demonstrates this fact and it is merely a case where the Court does not agree with plaintiff's contentions on the issues involved.

ALLEGED COMMERCIAL SUCCESS.

The question of commercial success is again raised in the petition, but, as pointed out in our briefs, the commercial success of Casco with a wholly different automatic lighter today cannot be substituted for the *failure* of Mead and the Jessop Company with a modified Mead device in 1928. Plaintiff admits that it makes no commercial use of the structures shown in the recent Johnson and Cohen patents.

It is our position that commercial success should only be considered when it has some direct relation with the disclosures of the patents in suit.

MEAD PATENT NO. 1,736,544.

On pages 7 and 8 of plaintiff's petition, concerning the Mead patent, it is stated "defendant itself in effect admitted that the decision of the lower court as to validity was correct." It further states that validity was an "abandoned defense." These statements are wholly unfounded. Paragraphs 12, 13, 14, 15, 16 and 18 of the answer (Rec. 8-10) set forth this defense and the notice of appeal (Rec. 265) states that defendant appeals to this court "from that part of the decree which was entered herein on July 14, 1939, and holds that Letters Patent to Mead No. 1,736,-544, as to claims 2, 3 and 11 thereof, is *valid* and has been infringed by defendant."

Defendant bases its argument solely upon our petition for rehearing in the District Court (Rec. 244) wherein defendant pointed out that in the Court's original memorandum (Rec. 239), it was stated that the defense on the three patents was on validity, alone, and no mention was made of the defense of non-infringement.

The petition was no abandonment of the defense of validity but merely called attention to the fact, frankly, that defendant's "principal and primary defense as to the Mead patent" was non-infringement and that we did not stress the defense of invalidity. Surely the fact that counsel chooses to urge one defense more strongly than another is no abandonment of a defense which had not been emphasized.

As we pointed out in the briefs we submitted to the District Court as well as in the briefs before this Court, if the claims in suit are interpreted broadly enough to cover defendant's device, the claims would be invalid because Mead was not the first inventor, particularly in view of the Copeland Patent No. 1,844,206 (Rec. 440).

ALLEGED INFRINGEMENT OF THE MEAD PATENT.

Plaintiff's reargument of infringement has been so completely covered in the briefs, discussed at the oral argument, and accurately presented and decided in the decision of this Court on April 27, 1940, that further discussion can be but mere repetition.

It is not a case, as stated on page 10 of the petition, of "*reading into* the Mead claims a limitation." The claims are expressly limited to moving the "heater member" and that is exactly what Mead does and what defendant does *not* do. As was pointed out on page 19 of our reply brief in the No. 7103 case, this Court passed on substantially the same question in *Sinko* v. *Casco*, 89 Fed. (2d) 916. The same conclusion was reached by the District Court in *Casco* v. *Sinko*, 42 U. S. P. Q. 498. The present decision is exactly in accord with those earlier decisions, and could not be otherwise without overruling those recent cases.

This Court was exactly right when it stated that if the interpretation urged by plaintiff was accepted "it would preclude the use of any thermostatic wireless cigar lighter,

operable by a thermostat, without infringement." On page 10 of its petition, plaintiff argues that the device shown in Smith British patent (Rec. 481) is a wireless cigar lighter operable by a thermostat that could be made without infringing. We disagree with this argument because the Smith device is *operated* by a switch lever 19 and not by a thermostat. As plaintiff pointed out at the argument, Smith provides a hunting thermostat which is merely a safety device to prevent overheating. The circuit is closed and held closed by hand, independently of the thermostat.

COPELAND PATENT No. 1,844,206.

Plaintiff argues that in the Copeland device the thermostat is not operated by the heat of the igniter coil but is operated by the heat from an extra resistance coil wound around the thermostat.

As we pointed out to the District Court, bimetal thermostats are not concerned with where the heat comes from. The Copeland thermostat is close enough to the igniter coil to be operated by the heat from it, but in addition to this an auxiliary heating coil is provided—no doubt to speed up the action. Certainly, there is no novelty in placing the thermostat close to the part whose heat is to be controlled by the thermostat. That is the normal thing to do in electric irons and other prior art. To illustrate this, Sandin (Rec. 412) operates his thermostat 15 directly from the heat of a heating element 11. Carmean, *et al.* (Rec. 426), who filed more than a year before Mead,

operates his thermostatic element 29 directly from the spirally arranged heating element 14.

On page 12 of the petition plaintiff again vainly asserts that Mead had his invention prior to Copeland. On pages 25-27 of our reply brief in the No. 7103 case, we carefully analyzed the testimony of all of plaintiff's witnesses on this point and showed that the attempt to antedate Copeland was a complete failure. We also pointed out that under the authorities, to carry back such a date, "the Courts require a certainty of proof which is seldom demanded elsewhere" and "which does not admit of reasonable doubt." In its petition plaintiff says: "We shall not here review the evidence" on this point. We might point out that it very wisely did not attempt to review the evidence on this point either in the District Court, briefs in that Court, or in this Court, or at the oral arguments. It merely slid over the void with an assertion that Mead was first, and left to defendant the burden of showing the failure to carry back Mead's date of invention.

One other point, mentioned by plaintiff on page 3 of the petition, is criticism of this Court's statement, "Mead's thermostat is outside both the plug and the socket." Plaintiff says this is erroneous, but it is clear that the Court was referring to the actual Mead device which Mead and the Jessop Company attempted to market (See Plaintiff's Exhibit 37). Obviously, it was impractical to have the thermostat inside the socket, as the intense heat from the element would destroy it.

COHEN PATENT NO. 2,140,311 (Rec. 298).

On page 16 of plaintiff's brief in support of its petition for rehearing it calls attention to a minor error in the description in the first paragraph in this Court's decision under the above heading. It is clear, however, that the Court understands the structure of the Cohen patent and the slight inaccuracy could have in no way affected the holding of invalidity on the grounds that the claims were inserted after defendant's device was on the market, and the holding of invalidity on the grounds of lack of novelty.

We suggest that for perfect accuracy, if the court wishes to modify its decision at all, the first paragraph under the heading "Cohen Patent No. 2,140,311" might be rewritten as follows:

> "It is unnecessary to describe this patent in detail. Its general external appearance resembles all other devices of that character. It differs from Mc d in that Cohen secures his thermostat to the bottom of the socket and when the plug is entirely inserted in the socket, the arms of the thermostat engage the end of the collar button stud which is attached to *a spring-pressed slide in the socket.* He also disclosed the alternative of placing the thermostat on the end of the *spring-pressed slide* so that it may engage a collar button stud which is fastened to the bottom of the socket."

In the suggested substitute paragraph the part in italics has been changed.

In the fifth paragraph of the Court's decision under the same heading, the same minor error is noted. In the interests of complete accuracy, we suggest that the Court might substitute for that paragraph the following:

> "The second feature apparently was an afterthought. An examination of the file wrapper of the Cohen Patent No. 2,140,311 shows that the original specification and drawings, as filed in the Patent Office, contained no hint or suggestion that the thermostatic switch might be mounted solely in the plug member (as now practiced by defendant) or in fact anywhere except in the socket member. In defendant's device the thermostatic switch is always concealed within the plug."

That the above is an accurate statement will be clear from an examination of the certified copy of the file wrapper and contents of Cohen Patent No. 2,140,311, Defendant's Physical Exhibit L. It was only after seeing defendant's device on the market, as pointed out in the next two paragraphs of this Court's decision, that an attempt was made to broaden the specification and add claims to appropriate defendant's contribution to the art.

This outrageous practice is a flagrant abuse of the very purpose and intent of the patent laws. The Patent Office is powerless to prevent it because it has no knowledge of commercial developments or the intervening rights of others. The Courts invariably give relief to defendants when the facts are shown, but there is no way for defendant to recoup its damages for lost business as the re-

sult of such a suit for infringement, nor is the defendant compensated for its expense in attorneys' fees, etc., in defending such an unwarranted suit. This Court is fully justified, and supported by a long line of highest authorities, in striking down an entire patent where such facts are shown. Also, the Court is clearly justified in affirming the District Court in its holding that the patent is invalid for lack of novelty.

JOHNSON PATENT NO. 2,129,374.

The device shown in the Johnson patent is a plain, ordinary, garden variety of *mere reversal* of the device shown in Cohen Patent No. 2,117,232 (Rec. 464). This latter patent, while very similar to the Cohen patent in suit (Rec. 296), is of a slightly different construction.

Again, merely for the purpose of complete accuracy, we suggest that the second paragraph under the heading "Johnson Patent No. 2,129,374" might be changed to read as follows:

> "There are no new elements disclosed here, and the patent differs from Cohen Patent No. 2,117,232 in that Johnson places the exposed thermostat on the inner end of the plug while in Cohen the exposed thermostat is fastened in the socket. What we have said with respect to the Cohen patent in suit is quite applicable to Johnson. Furthermore, the date of Johnson's application, which is his effective date, was long subsequent to defendant's disclosure. These claims are invalid for the same reasons assigned by us in the ruling on the Cohen patent in suit."

In the suggested substitute paragraph, the distinction is drawn between the two Cohen patents and it is believed that this will avoid confusion.

Plaintiff's statement on page 21 that Johnson was the first in the art to mount the igniter resistance coil and the thermostatic fingers on a single unit, which in turn was removably mounted on the plug for replacement purposes,

is directly contrary to the evidence, and decision of this Court. This Court correctly held that the claims relied upon in the Johnson Patent No. 2,129,374 are invalid because the date of Johnson's application "was long subsequent to the defendant's disclosure."

This Court said, "Defendant developed his device in September, 1933, and it was proven successful by a test in October 16, 1933." This finding was made on the evidence, including the testimony of four unimpeached witnesses, a sample of the device (Defendant's Exhibit J), and certain documentary exhibits (H and I). That the unit is attached by a threaded connection is clear from an examination of the Exhibit J itself.

CONCLUSION.

The decision of this Court handed down April 27, 1940, is ample evidence that the Court carefully considered, fully understood, and correctly decided all of the issues between the parties. For the purpose of perfect accuracy, we submit that the three substitute-paragraphs suggested in this answer might be used if the Court wishes to make any change at all, but clearly no rehearing is necessary to make such minor corrections from the record.

Accordingly, it is submitted that the petition for rehearing should be denied and mandate of this Court issue.

Respectfully submitted,

RUSSELL WILES,
BERNARD A. SCHROEDER,
GEORGE A. CHRITTON,
Of Counsel for Defendant.

CHRITTON, WILES, DAVIES, HIRSCHL & DAWSON,
Attorneys for Defendant.

May 13, 1940.

Endorsed: Filed May 13, 1940. Frederick G. Campbell, Clerk.

And afterwards, to-wit: On the eighteenth day of June, 1940, the following further proceedings were had and entered of record, to-wit:

Tuesday, June 18, 1940.

Court met pursuant to adjournment.

Before:

Hon. Evan A. Evans, Circuit Judge.
Hon. William M. Sparks, Circuit Judge.
Hon. J. Earl Major, Circuit Judge.

The Automatic Devices Corporation,
Plaintiff-appellee,
7103 *vs.*
Sinko Tool & Manufacturing Company,
Defendant-appellant.

The Automatic Devices Corporation,
Plaintiff-appellant,
7104 *vs.*
Sinko Tool & Manufacturing Company,
Defendant-appellee.

Appeals from the District Court of the United States for the Northern District of Illinois, Eastern Division.

It is ordered by the Court that the opinion of this Court filed in this cause on April 27, 1940, be, and it is hereby, amended as follows: On page 11 in the fifth line from the end of the page the words "the bottom of the plug" are changed to "a spring-pressed slide in the socket", and in the third line from the end of the same page the words "end of the plug" are changed to "spring-pressed slide". On page 13 the paragraph contained in lines 24 to 39 inclusive is stricken and in lieu thereof is inserted "With respect to the second feature, it is sufficient to say that it never appeared in the original specifications and drawings of Cohen No. 2,140,311. They never intimated the mounting of the thermostatic switch in the plug member, as practiced by the defendant, until long later by amendment

under circumstances presently to be mentioned." And on page 15 the paragraph contained in lines 8 to 17 inclusive is stricken and in lieu thereof is inserted, "There are no new elements disclosed here, and the patent differs from Cohen patent No. 2,117,232 in the Johnson places the exposed thermostat on the inner end of the plug, while in Cohen the exposed thermostat is fastened in the socket. What we have said with respect to the Cohen patent in suit is quite applicable to Johnson. Furthermore, the date of Johnson's application, which is his effective date, was long subsequent to defendant's disclosure. These claims are invalid for the same reasons assigned by us in the ruling on the Cohen patent in suit."

And on the same day, to-wit: On the eighteenth of June, 1940, the following further proceedings were had and entered of record, to-wit:

Tuesday, June 18, 1940.

Court met pursuant to adjournment.

Before:

Hon. Evan A. Evans, Circuit Judge.
Hon. William M. Sparks, Circuit Judge.
Hon. J. Earl Major, Circuit Judge.

The Automatic Devices Corporation,
Plaintiff-appellee,
7103 *vs.*
Sinko Tool & Manufacturing Company,
Defendant-appellant.

The Automatic Devices Corporation,
Plaintiff-appellant,
7104 *vs.*
Sinko Tool & Manufacturing Company,
Defendant-appellee.

Appeals from the District Court of the United States for the Northern District of Illinois, Eastern Division.

It is ordered by the Court that the petition for a rehearing of this cause be, and it is hereby, denied.

And afterwards, to-wit: On the twenty-fourth day of June, 1940, the following further proceedings were had and entered of record, to-wit:

Monday, June 24, 1940.

Court met pursuant to adjournment.

Before:

Hon. William M. Sparks, Circuit Judge.

The Automatic Devices Corporation,
Plaintiff-appellee,
7103 *vs.*
Sinko Tool & Manufacturing Company,
Defendant-appellant.

The Automatic Devices Corporation,
Plaintiff-appellant,
7104 *vs.*
Sinko Tool & Manufacturing Company,
Defendant-appellee.

Appeals from the District Court of the United States for the Northern District of Illinois, Eastern Division.

On motion of counsel for The Automatic Devices Corporation, it is ordered that the mandate of this Court in this cause be, and it is hereby stayed pursuant to Rule 25 of the rules of this Court.

And afterwards, to-wit: On the eighth day of July, 1940, there was filed in the office of the Clerk of this Court, a stipulation relative to record in connection with petition for writ of certiorari, which said stipulation is in the words and figures following, to-wit:

IN THE UNITED STATES CIRCUIT COURT OF APPEALS

For the Seventh Circuit.

The Automatic Devices Corporation, *Plaintiff-appellee,* vs. Sinko Tool & Manufacturing Company, *Defendant-appellant.* 7103	Appeals from the District Court of the United States for the Northern District of Illinois, Eastern Division.
The Automatic Devices Corporation, *Plaintiff-appellant,* vs. Sinko Tool & Manufacturing Company, *Defendant-appellee.* 7104	

STIPULATION RE RECORD IN CONNECTION WITH PETITION FOR WRIT OF CERTIORARI.

It Is Hereby Stipulated and Agreed, by and between counsel for the respective parties to the above-entitled causes:

1. That the record filed in the appeals in the above-mentioned cases may be used in connection with a petition for writ of certiorari by The Automatic Devices Corporation, Plaintiff-Appellee and Plaintiff-Appellant, subject to and in accordance with the provisions of the stipulation filed October 17, 1939 (Rec., 276), with the addition of a transcript of the record of the proceedings in this Court comprising the following papers, and no others:

(a) The opinion of this Court dated April 27, 1940.

(b) The decree of this Court in accordance with the opinion dated April 27, 1940.

(c) Plaintiff's petition for rehearing and brief in support thereof.

(d) Defendant's answer to plaintiff's petition for rehearing.

(e) Order of June 18, 1940, modifying the opinion of April 27, 1940.

(f) Order of June 18, 1940, denying petition for rehearing.

(g) Order of June 24, 1940, staying the mandate.

(h) This stipulation.

2. That all original exhibits may be withdrawn and retained in the custody of the respective parties, and that said exhibits shall be produced at the time of hearing in the Supreme Court (if the petition for writ of certiorari should be granted) or at such other time as the Supreme Court may direct.

Henry M. Huxley,
Of Counsel for The Automatic Devices Corporation.

Bernard A. Schroeder,
Of Counsel for Sinko Tool & Manufacturing Company.

Endorsed: Filed July 8, 1940. Kenneth J. Carrick, Clerk.

UNITED STATES CIRCUIT COURT OF APPEALS

For the Seventh Circuit.

I, Kenneth J. Carrick, Clerk of the United States Circuit Court of Appeals for the Seventh Circuit, do hereby certify that the foregoing printed pages, numbered from 501 to 567, inclusive, contain a true copy of proceedings had and papers filed, made in accordance with the stipulation re record in connection with petition for writ of certiorari filed on the eighth day of July, 1940, in the following entitled causes:

The Automatic Devices Corporation,
7103 *Plaintiff-Appellee,*

vs.

Sinko Tool & Manufacturing Company,
Defendant-Appellant.

The Automatic Devices Corporation,
7104 *Plaintiff-Appellant,*

vs.

Sinko Tool & Manufacturing Company,
Defendant-Appellee,

as the same remains upon the files and records of the United States Circuit Court of Appeals for the Seventh Circuit.

In Testimony Whereof I hereunto subscribe my name and affix the seal of said United States Circuit Court of Appeals for the Seventh Circuit, at the City of Chicago, this 17th day of July, A. D. 1940.

(Seal) Kenneth J. Carrick,
Clerk of the United States Circuit Court of Appeals for the Seventh Circuit.

SUPREME COURT OF THE UNITED STATES.

On Petition for Writ of Certiorari to the United States Circuit Court of Appeals for the Seventh Circuit

ORDER ALLOWING CERTIORARI—March 31, 1941

A motion for leave to file a petition for rehearing and petition for rehearing having been submitted in this case;

Upon consideration thereof, it is ordered by this Court that the motion for leave to file and petition for rehearing be, and the same are hereby, granted.

And it is further ordered that the order denying certiorari be, and the same is hereby, vacated; and that the petition for writ of certiorari herein be, and the same is hereby, granted limited to the question whether claims 2, 3 and 11 of the Mead patent No. 1,736,544 are valid.

And it is further ordered that the duly certified copy of the transcript of the proceedings below which accompanied the petition shall be treated as though filed in response to such writ.